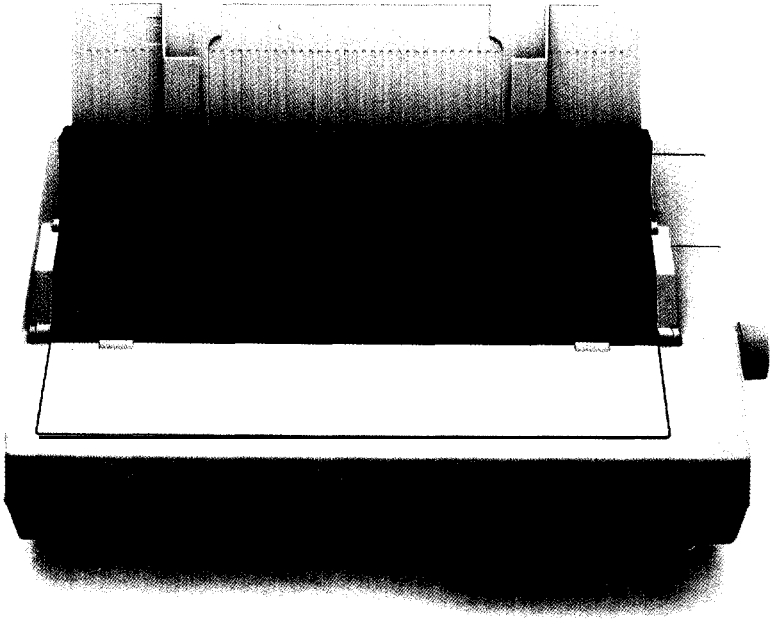
User's Manual.



LQ-2550

EPSON®

Y45699127000

EPSON®
L Q - 2 5 5 0

User's Manual

FCC COMPLIANCE STATEMENT FOR AMERICAN USERS

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the printer with respect to the receiver
- Plug the printer into a different outlet so that the printer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"Television Interference Handbook."

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00450-7.

WARNING

The connection of a non-shielded printer interface cable to this printer will invalidate the FCC Certification of this device and may cause interference levels which exceed the limits established by the FCC for this equipment. If this equipment has more than one interface connector, do not leave cables connected to unused interfaces.

IMPORTANT NOTICE

Seiko Epson Corporation and its affiliates ("Epson") specifically disclaims all liability for problems and all damages which may result from the combination or use of Epson printers with software, hardware product options, such as interface boards, or other items not supplied by Epson or otherwise designated by Epson to be compatible with Epson printers. Epson further specifically disclaims all liability for problems and all damages which may result from the unauthorized alteration or modification of Epson printers, whether or not such alteration or modification is accomplished by software, hardware or other means.

Epson America, Inc. shall not be liable against any damages or problems arising from the use of any options or any consumable products other than those designated as Original Epson Products or Epson Approved Products by Seiko Epson Corporation.

Table of Contents

Introduction

The LQ-2550 is the latest in the Epson@ line of advanced 24-pin impact dot matrix printers, combining high performance and reliability with a wide range of features.

Features

In addition to the high-quality printing and ease of operation you have come to expect from Epson printers, the LQ-2550 offers the following:

- An improved control panel design that allows direct selection of all of the printer's main features, such as character font and pitch as well as normal or condensed printing.
- An advanced paper handling system that allows you to easily switch between single sheets and continuous paper by pressing the appropriate panel buttons. The LQ-2550 automatically detects the thickness of the paper you load, so optimum printing results can be easily achieved with various types of paper. You can use single sheets without removing the continuous paper, or you can use continuous paper even while the optional Cut Sheet Feeder is installed.
- A tear-off feature that saves paper. After you tear off the latest sheet printed on continuous paper, the printer feeds the paper back to the loading position so that you can use all of the next sheet.
- Multi-part forms that consist of up to six parts (5 copies plus the original) can be printed. You can also print on labels and envelopes.
- A micro-adjustment feature that allows you to feed the paper forward or backward in 1/180th of an inch increments to finely adjust the top of form, loading, and short tear-off positions.
- The following seven built-in Letter Quality fonts are provided for producing high-quality documents:

  Roman, Sans Serif, Courier, Prestige,
  Script, OCR-A, OCR-B

- Two additional Letter Quality fonts are available with the optional Multi-Font Module: ORATOR and ORATOR-S
- Draft mode with fast printing of up to 333 characters per second in 10 cpi (characters per inch), and 400 characters per second in 12 cpi.
- Color printing in seven colors with a color ribbon (included). With suitable graphics software, you can mix colors within a line or even print screen dumps in color.
- Compatibility with the Epson ESC/P commands used by the LQ-1500, LQ-800, LQ-1000, LQ-2500, LQ-850, LQ-1050 and LQ-500 printers.

Options

A variety of printer options is available for use with your LQ-2550 printer. For detailed information on the installation and use of these options, see Chapter 7.

- Double-Bin Cut Sheet Feeder (#7343)
  The cut sheet feeder gives you easier and more efficient handling of single sheet paper or envelopes. Up to 150 sheets of standard bond paper in each of the two bins can be automatically fed into the printer without reloading.
- Pull Tractor Unit (#7314)
  This option improves the performance of continuous paper handling. It is especially useful with continuous multi-part forms.
- Ribbon Cartridges (#7762, #7763, #7764)
  There are two types of ribbon cartridges in addition to the standard black ribbon cartridge (#7762). Included with your printer are the standard black ribbon cartridge (#7762) and the color ribbon cartridge (#7763). The film ribbon cartridge (#7764) provides you with even higher-quality printing.
- Multi-Font Module (#7407)
  This adds two Letter Quality fonts ORATOR and ORATOR-S.

- LQ Printer Software (DCB-LQ2)
  This package features a driver and high-resolution fonts for use with Microsoft@ Windows Presentation Manager version 2.0 and Windows/386 Presentation Manager. It lets you use your Epson LQ printer to print pages created under the Microsoft Windows operating environment.

- Optional Interface Boards
  A number of optional interface boards can be used to supplement the LQ-2550's built-in parallel and serial interfaces. Guidelines for choosing the right interface and instructions on installing the boards are given in Chapter 7.

About This Guide

This user's guide provides fully illustrated, step-by-step instructions for setting up and operating the LQ-2550 printer.

- Chapter 1 contains information on unpacking, setting up, testing, and connecting the printer, so be sure to read and follow the instructions in this chapter first.

- Chapters 2 and 3 include important information on paper handling and general printer operation. This information is necessary for the day-to-day operation of your printer.

- Chapter 4 contains information designed to help you get the most from your printer. This section includes advice on the use of software, commands, graphics, and user-defined characters. Also, see Chapter 8 for a summary of printer commands.

- If the printer does not operate properly or the printed results are not what you expect, see Chapter 6 for a list of recommended solutions.

- Other chapters and appendixes contain information on general maintenance, use of the printer options, and specifications. You will also find a glossary of printer terms and an index.

- At the back of this guide is a Quick Reference card with the information you are likely to need most often.

Conventions **used** in this guide

WARNING: must be followed carefully to avoid damage to your printer and computer.

Cautions: should be followed carefully to ensure that your printer operates correctly.

Notes: contain important information and useful tips on the operation of your printer.

Where to Get Help

Customer support and service for Epson products are provided by a network of authorized Epson Dealers and Customer Care Centers throughout the United States. Epson America provides product information and support to its dealers and Customer Care Centers.

Therefore, we ask that you contact the business where you purchased your Epson product to request assistance.If the people there do not have the answer to your question, they can obtain it through our dealer support program.

Epson is confident that this policy will provide you with the assistance you need.

Call the Epson Consumer Information Center at `l-800-922-8911` for the following:

- The location of the nearest Epson dealer
- The location of the nearest Customer Care Center
- Information on Epson User Groups.

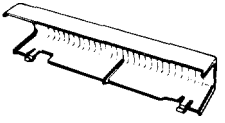
To locate or purchase accessories or supplies, contact your nearest Epson dealer or call `l-800-873-7766.`

Chapter 1

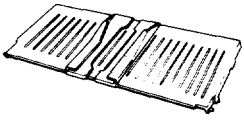
Setting Up the Printer

Unpacking the Printer

As you unpack the printer, check that you have all parts shown below and that none have been damaged during transportation.

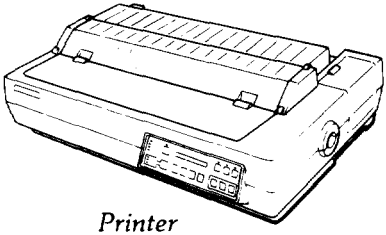


Cable cover



Paper guide

Color *ribbon* cartridge



Printer

Ribbon cartridge

Power cable

Platen knob

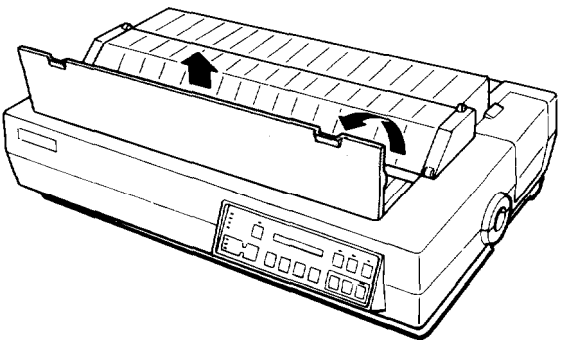
Cross-head screw driver

Optional connector lock nuts

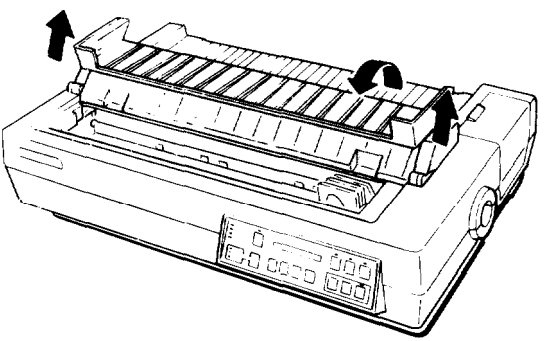
Removing the protective materials

The printer is protected during shipping by two screws, a print head protector, and white foam packing material. These protective items must be removed before you turn on the printer by following the steps below. After removing these items, store them with the other packaging material in case you ever need to transport your printer.

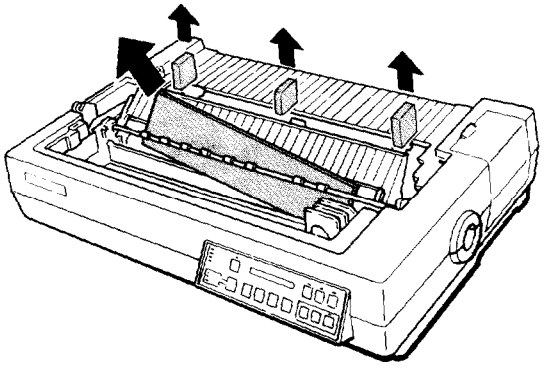
1. Open the printer cover and raise it to an upright position; then lift it up and off.



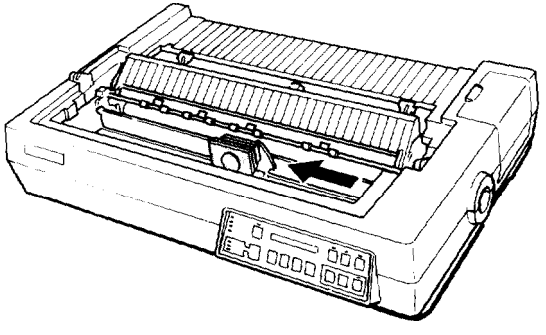
2. Open the paper guide cover as shown in the illustration. Then raise the cover slightly and lift the cover away from the printer at a slight upward angle.



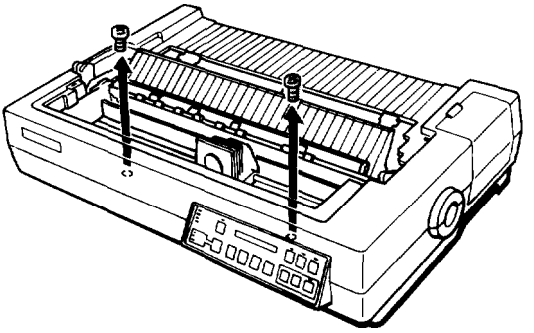
3. Remove the print head protector and white foam packing material.



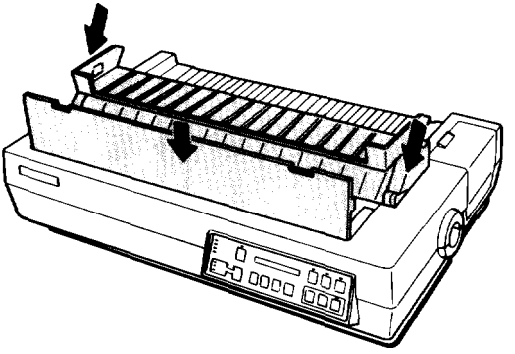
4. Slide the print head all the way to the middle



5. Using the enclosed cross-head screwdriver, remove the two red transport screws as shown below.

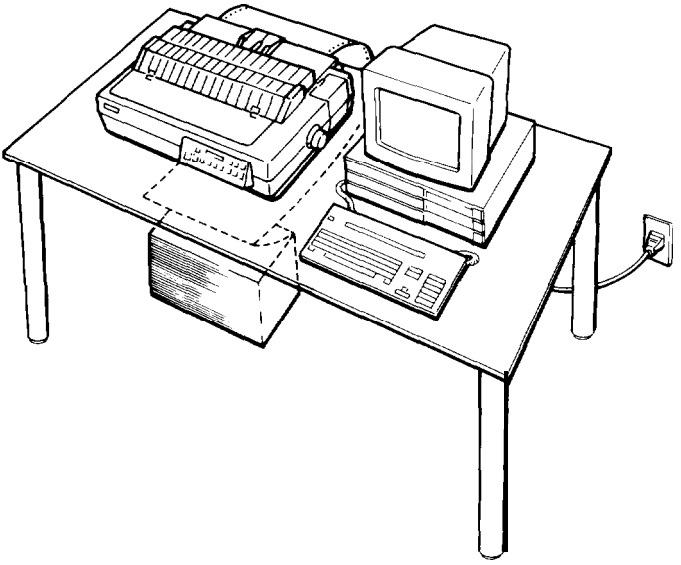


6. Align the pins of the paper guide cover with the slots on the printer and attach the cover. Next, attach the printer cover.



Choosing a Place for the Printer

There are several important things to consider when selecting a location for your printer. The illustration below shows a good printer location.



Be sure to keep the following tips in mind:

- Place the printer on a flat, stable surface.
- Place the printer close enough to the computer for its cable to reach.
- Leave adequate room around the printer to allow easy printer operation and maintenance.

- Use a grounded outlet - one that has three holes to match the power plug on the printer. Don't use an adapter plug.
- Avoid locations that are subject to direct sunlight, excessive heat, moisture, or dust.
- Avoid using electrical outlets that are controlled by wall switches or automatic timers. Accidental disruption of power can wipe out information in your computer's and printer's memory.
- Avoid using outlets on the same circuit with large motors or other appliances that might disturb the power supply.
- Keep the entire computer system away from potential sources of interference, such as loudspeakers or the base units of cordless telephones.

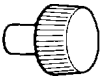
Assembling the Printer

After you have decided on a location for your printer, it is necessary to install the platen knob, the ribbon cartridge, and the paper guide. Installation instructions for these three components are given below.

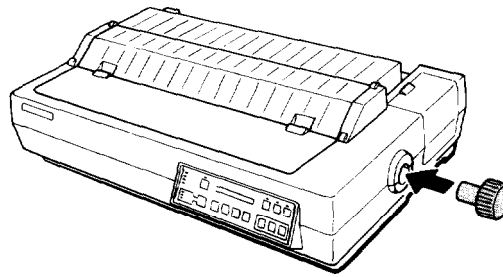
Installing the platen knob

After you have decided on a location for your printer, the first step in setting it up is to install the platen knob.

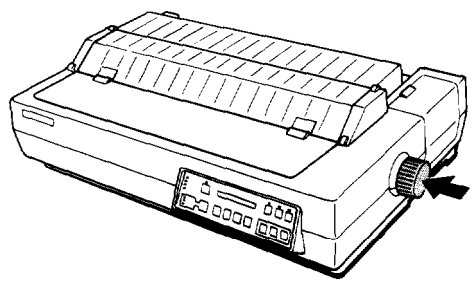
You will find the platen knob packed in an indentation in the white foam packing material.



1. Insert the platen knob into the hole on the printer's side and rotate it until it slips onto the shaft.



2. Press firmly on the knob until it fits against the printer case.

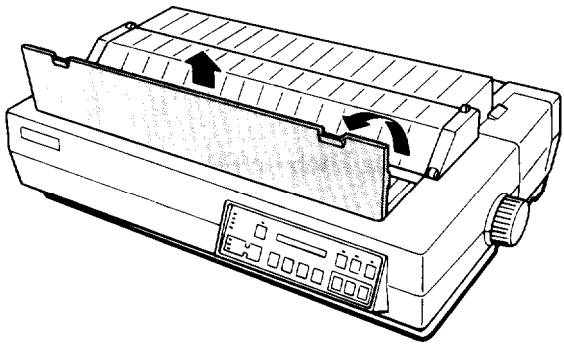


Caution: Using the platen knob to adjust the position of the paper interferes with the automatic paper loading system and may cause a paper **jam.** If you need to adjust the position of the paper after it is loaded, use the micro-adjustment feature described in the section on setting the loading position in Chapter 3.

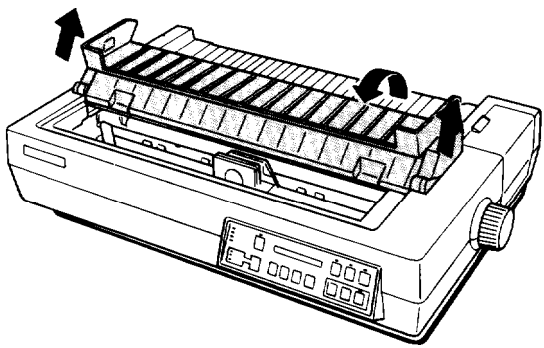
Installing the ribbon cartridge

Your printer's ribbon cartridges are designed for easy installation and removal. The color ribbon cartridge, standard black ribbon cartridge, and optional film ribbon cartridge are all installed in the same way. (A color ribbon cartridge and standard black ribbon cartridge are included with your printer.) Install any of these ribbon cartridges as follows:

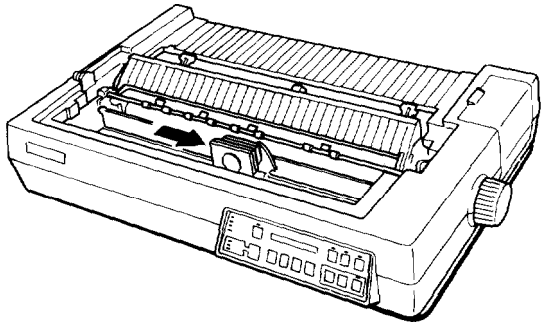
1. Open the printer cover and raise it to an upright position; then lift it up and off.



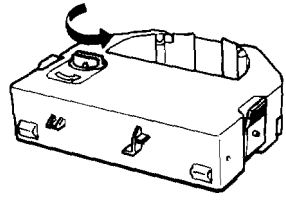
2. Open the paper guide cover as shown in the illustration. Then raise the rear of the cover slightly and lift the cover away from the printer at a slight upward angle.



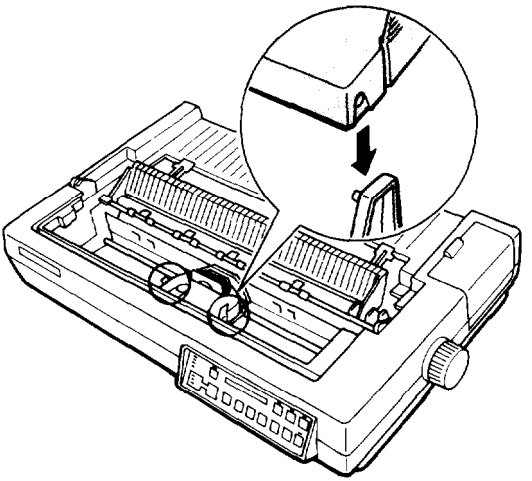
3. Slide the print head to the middle of the printer.



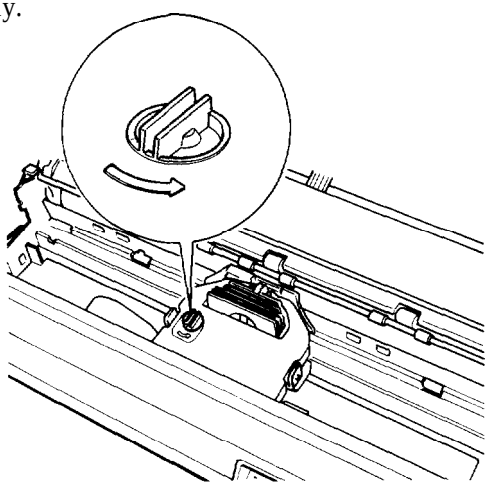
4. Turn the ribbon-tightening knob on the ribbon cartridge in the direction of the arrow.



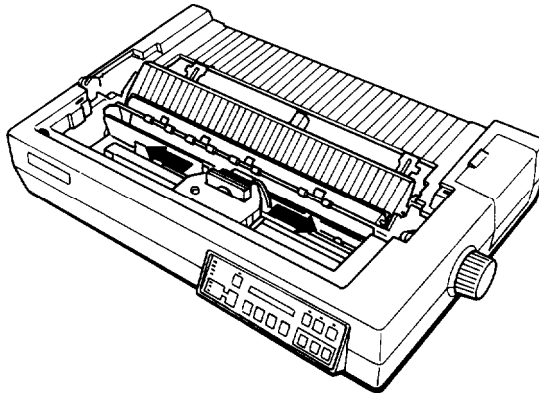
5. Hold the ribbon cartridge while gently squeezing the two ridged plastic tabs together; then lower it until it snaps into place. The side hooks in the printer should fit into the slots on each side of the ribbon cartridge.



6. Turn the ribbon tightening knob again to make sure the ribbon moves freely.



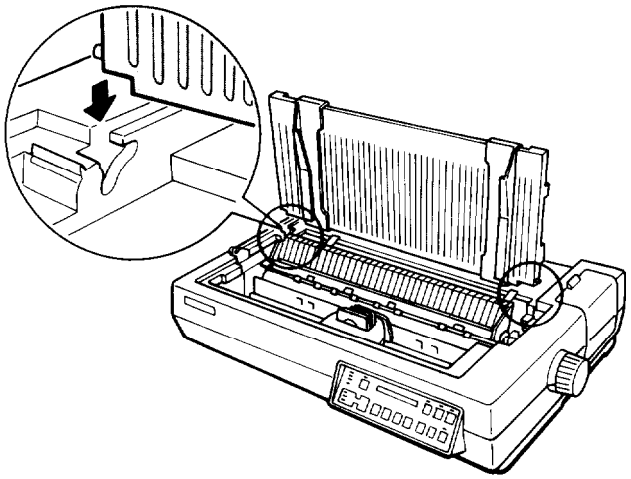
7. Slide the print head from side to side to make sure **that** it moves smoothly. (Do not try to slide the print head by grasping the ribbon cartridge.)



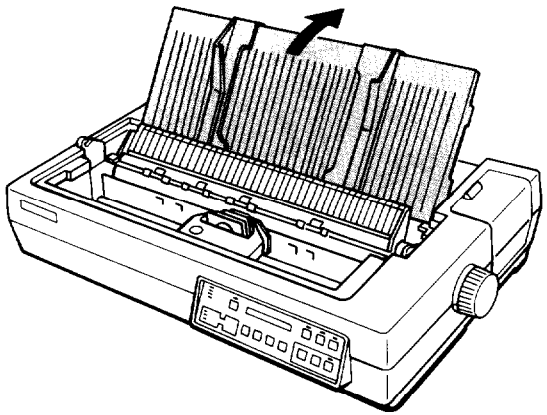
Attaching the paper guide

When you use single sheets, the paper guide functions to feed the paper smoothly and efficiently into the printer. Attach the paper guide using the following procedure.

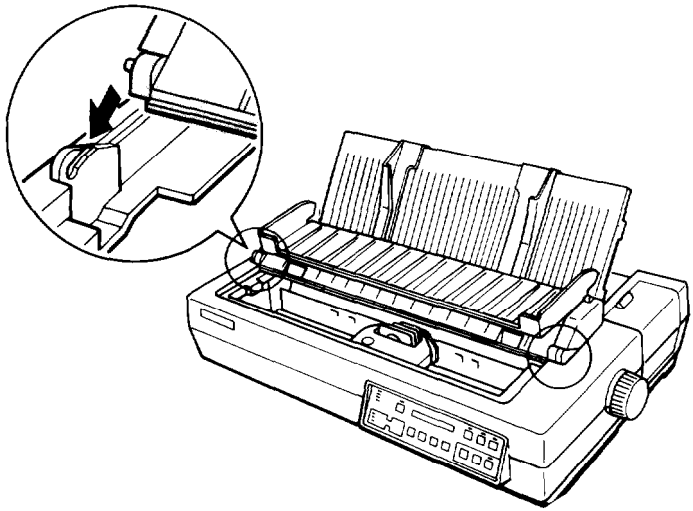
1. Insert the paper guide pegs into slots on the printer.



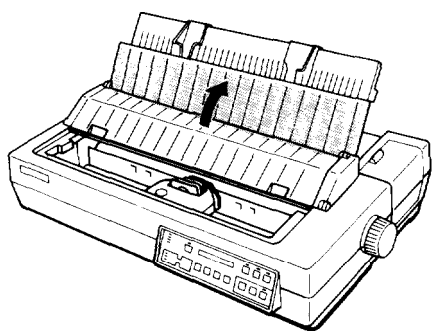
2. Lean the paper guide back until it slips into place.



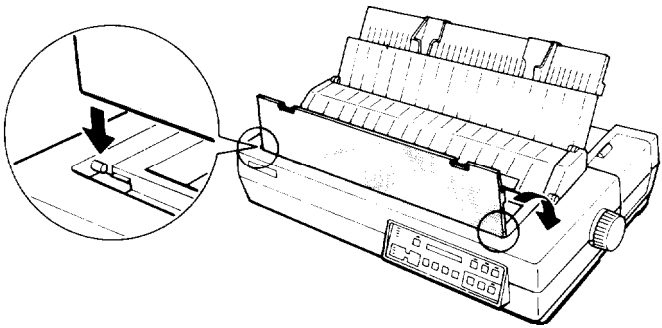
3. Align the pins of the paper guide cover with the slots on the printer and attach the cover.



4. Close the paper guide cover.



5. Attach the printer cover.



Testing the Printer

At this point, you can use the built-in self test function to see that the printer is working correctly even though it is not yet connected to a computer.

Be sure to perform this test to make sure that your printer was not damaged during shipping and to ensure that the ribbon is correctly installed.

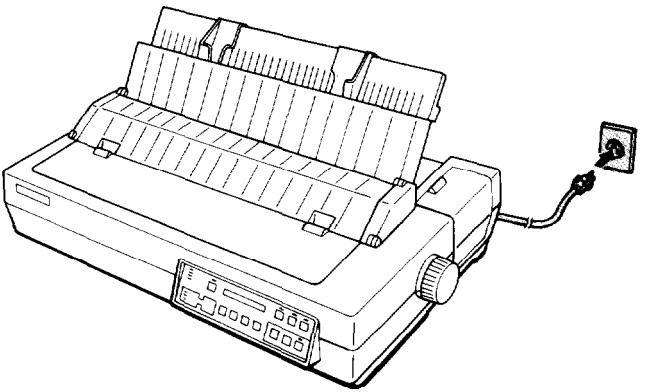
Before running the self test, you need to connect your printer to a power supply and load a sheet of paper.

Connecting to a power supply

Before plugging in your printer, be sure that:

- The platen knob is installed.
- The ribbon cartridge is installed.
- The paper guide is attached.
- The paper guide cover is attached.
- The printer cover is attached.
- The power switch on the left side of the printer is turned off.

To plug in your printer, simply connect the power cable to the AC inlet on the printer's rear panel. Then plug the power cable into a properly grounded electrical outlet.



Running the self test

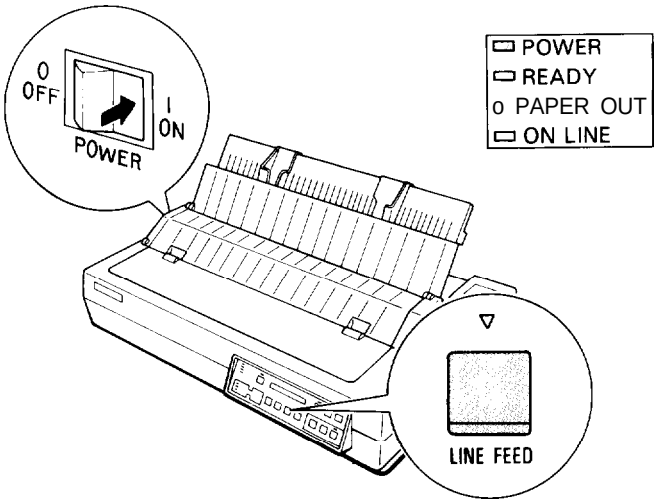
The self test can be run in draft mode or Letter Quality mode, depending on which button you hold down as you turn on the printer. With the color ribbon cartridge installed, the self test prints in seven colors (black, magenta, cyan, violet, yellow, red, and green).

Before running the self test, be sure that:

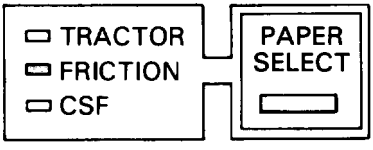
- The power cable is connected to a properly grounded electrical outlet.
- The printer is turned off.

Note: Run the self test using paper that is at least as wide as standard letter-size paper (8% inches).

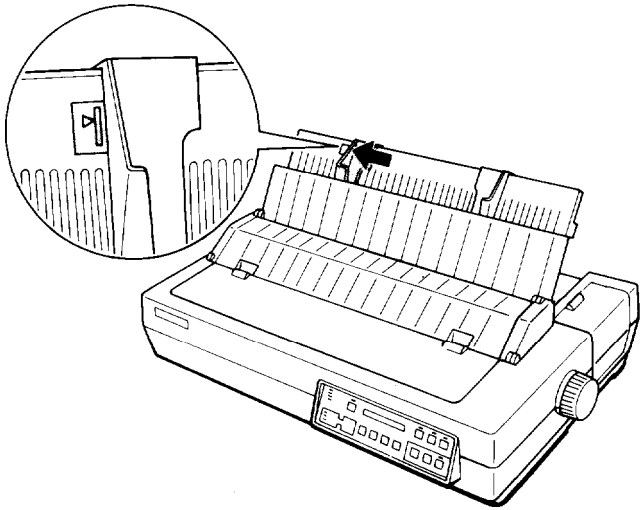
1. While holding down the **LINE FEED** button (draft mode) or the **FORM FEED** button (Letter Quality mode), turn on the printer. The printer beeps three times and the **POWER** and **PAPER OUT** lights come on.



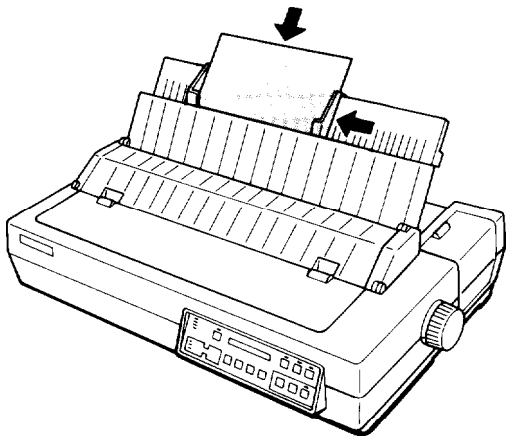
2. Press the **PAPER SELECT** button until the **FRICTION** light comes on.



3. Move the left edge guide until it rests against the guide mark.

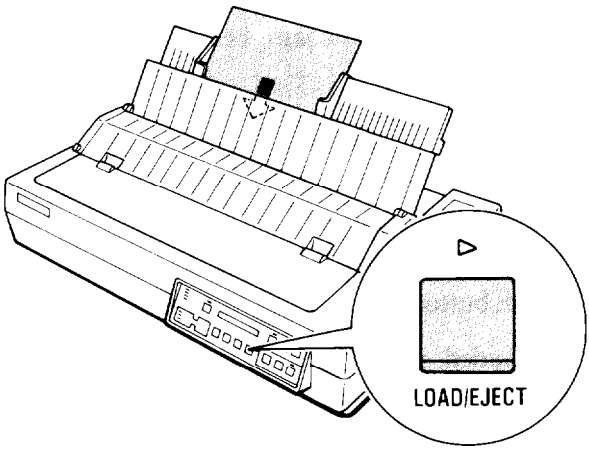


4. Adjust the right edge guide to match the width of your paper. Next, slide a sheet down between the edge guides until it meets resistance.

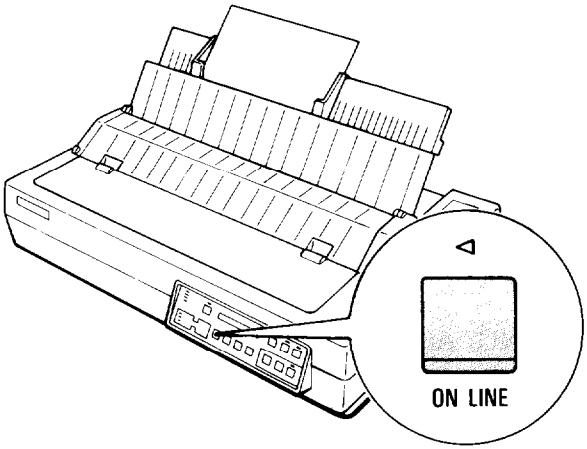


Run the self test using paper wider than A4 size (8.27 inches).

5. Press the **LOAD/EJECT** button once to automatically load the paper.



6. Press the **ON LINE** button to start the self test.

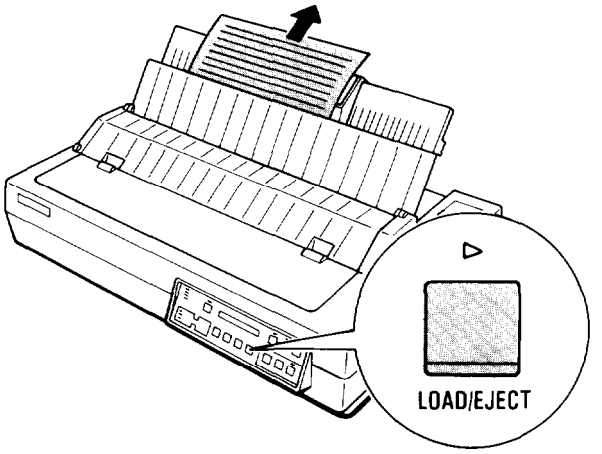


Note: To clear a paper jam, it is recommended **that** you set the printer off line and **use** the **FORM FEED** or **LINE FEED** button. If it is necessary to use the platen knob to clear the jam, be sure to turn the printer off first.

7. A list of your printer's settings is printed first, followed by a series of characters. The self test continues until the paper runs out or you press the **ON LINE** button.

   If **the** self test results are satisfactory and you wish to stop the test, press the **ON LINE** button.

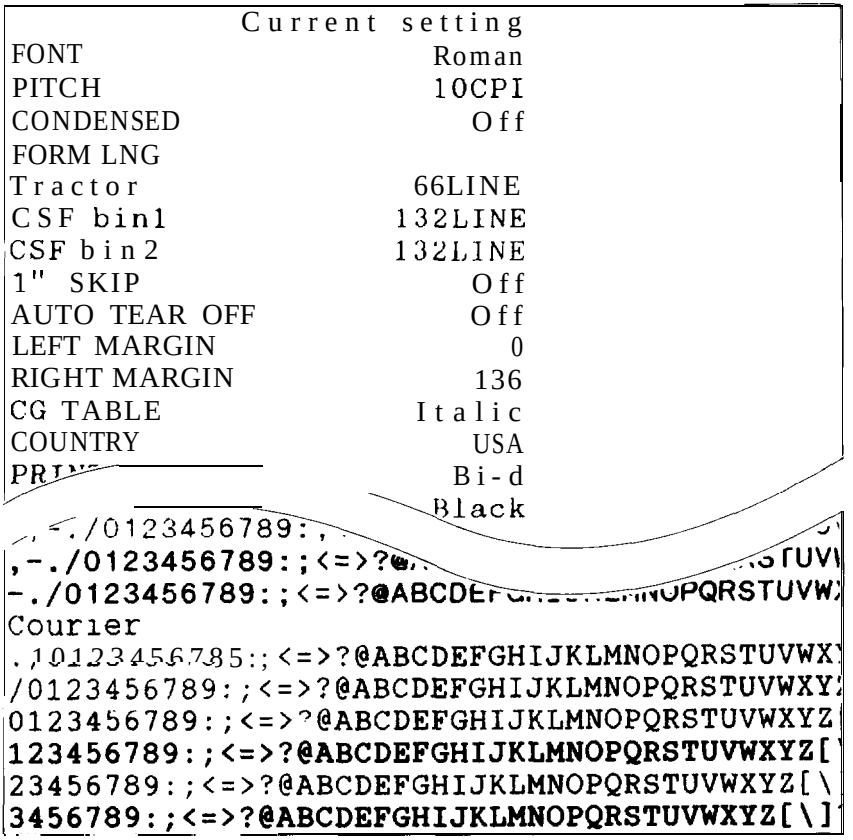
8. If paper is still loaded, press the **LOAD/EJECT** button to eject it. **Then** turn off **the** printer.



WARNING: After you turn off the printer, always wait at least five seconds before you turn it back on. Rapidly switching the printer on and off can damage the printer.

Part of a typical self test in Letter Quality mode with a black ribbon installed is shown in the following sample printout.

Self test in Letter Quality mode



Note: When a black ribbon is installed, some lines of the self test are printed in double-strike mode. Also, when the optional cut sheet feeder is installed, the self test printout is slightly different. For details, see the section on the cut sheet feeder in Chapter 7.

Connecting the Printer to Your Computer

Your LQ-2550 has two separate interface connections: a parallel interface and an RS-232C compatible serial interface. If you are not sure which one is required by your computer, check your computer manual for this information.

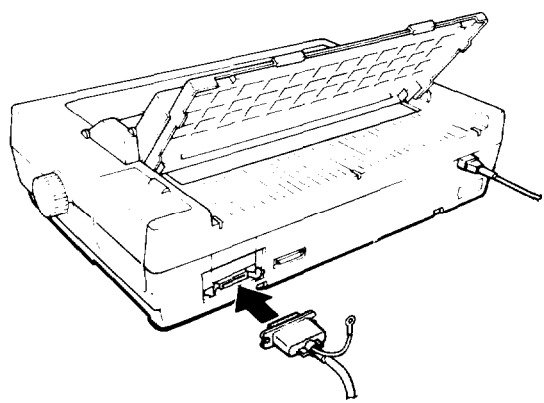
If you have a suitable shielded cable, you should be able to connect to most computers immediately.

The parallel interface

Connect the parallel interface cable as described below. Before connecting the parallel interface cable, be sure that:

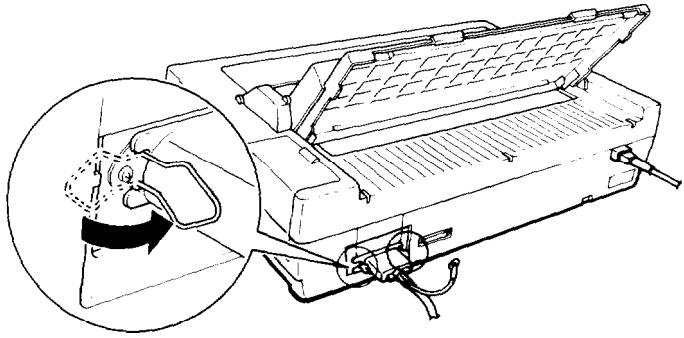
- The printer is turned off.
- The computer is turned off.

1. Plug the connector of the cable securely into the printer.

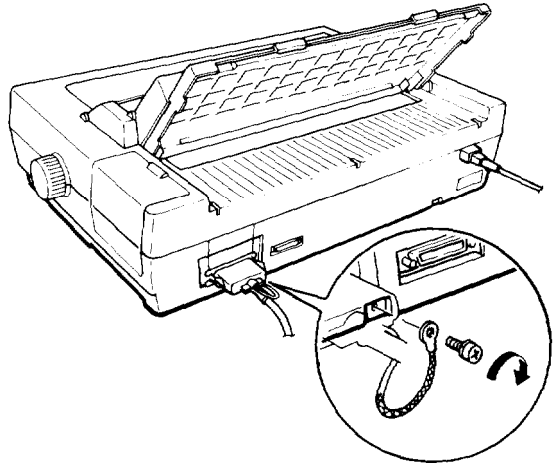


WARNING: Do not plug more than one interface cable into the printer at one time. This may damage the printer.

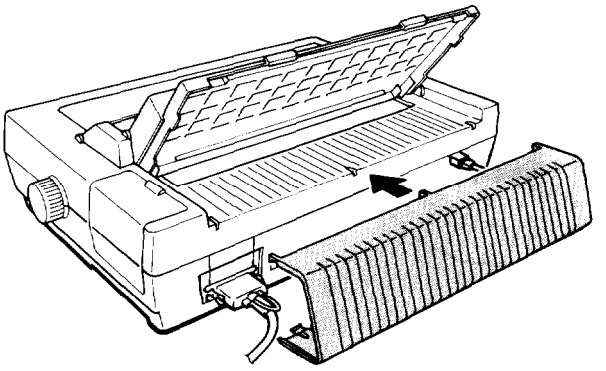
2. Squeeze the wire clips together until they lock in place on both sides of the connector. (If you do not lock these clips into place, printed results may be incorrect.)



3. If your cable has a ground wire, attach it to the ground connector beneath the interface connector.



4. Plug the other end of the cable into the computer. (If there is **a** ground wire at the computer end of the cable, attach it to the ground connector of the computer.)
5. Attach the cable cover.



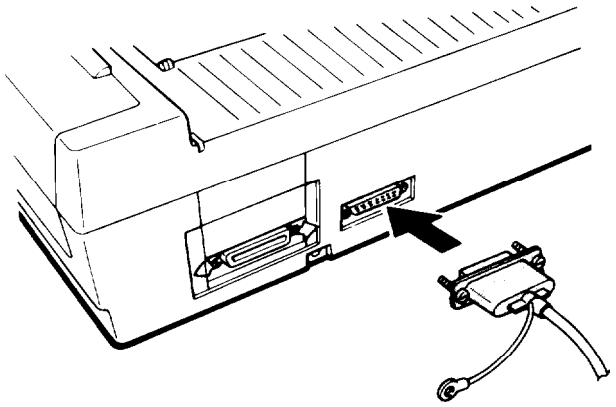
Note: The cable cover should always be attached when you use the printer.

The serial interface

Connect the serial interface cable as described in the following steps. Before connecting the serial interface cable, be sure that:

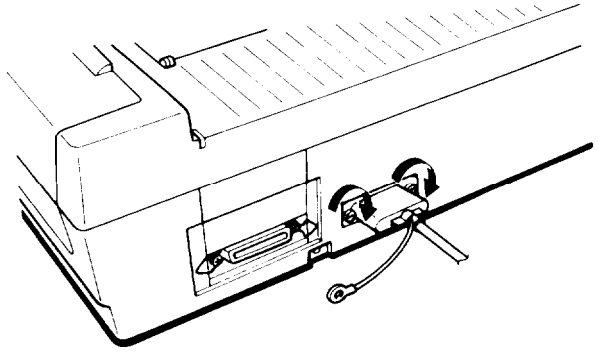
- The printer is turned off.
- The computer is turned off.

1. Plug the connector of the cable securely into the printer.



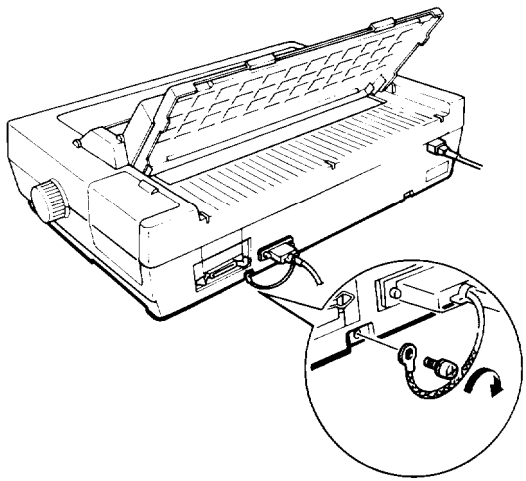
WARNING: Do not plug more than one interface cable into the printer at one time. This may damage the printer.

2. Using a screwdriver, secure the connector by tightening the screw on each side of the connector.



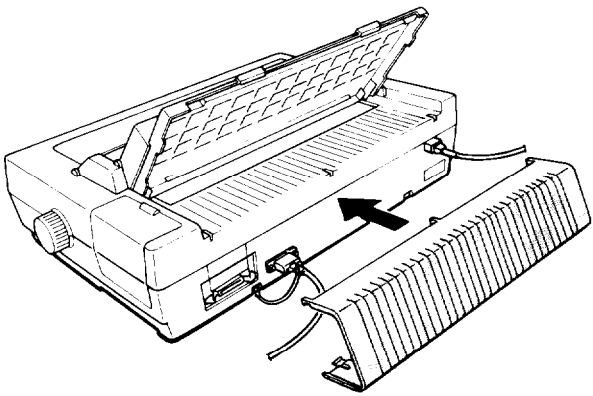
Note: If the screws that come with the cable do not fit into the connector lock nuts on the interface, you need to replace these lock nuts with the optional lock nuts provided with the printer.

3. If your cable has a ground wire, attach it to the ground connector beneath the interface connector.



4. Plug the other end of the cable into the computer. (If there is a ground wire at the computer end of the cable, attach it to the ground connector of the computer.)

5. Attach the cable cover.



Note: The cable cover should always be attached when you use the printer.

Setting Up Your Application Software

Now that you have set up and tested the LQ-2550, you should make sure that it works with the application programs you want to use. Most application programs let you specify the type of printer you are using so that the program can take full advantage of the printer's features. Many of these programs provide an installation or setup section that presents a list of printers to choose from.

Choosing from a menu

Because the family of Epson printers shares many commands, you can use an application program even if it does not list the LQ-2550 on its printer selection menu. If the LQ-2550 is not listed, select the first printer available on the following list:

LQ-2500
LQ-1050 (LQ-850)
LQ-1000 (LQ-800)
LQ-500
LQ-1500

If none of these printers is listed, select the first one available on the following list:

LQ

EX
FX
LX
RX
MX
Epson printer
Standard printer
Draft printer

If you are printing in color, it is recommended that you choose LQ-2550 or LQ-2500.

To use all the features of the LQ-2550, however, it is best to use a program with the LQ-2550 on its menu. If your program does not list this printer, contact the software manufacturer to see if an update is available. For further information on using software, see Chapter 4.

Chapter 2

Paper Handling

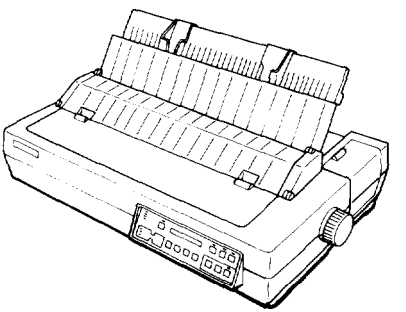
Using Single Sheets

Your printer can accommodate single sheets from 7.2 to **14.3** inches wide.

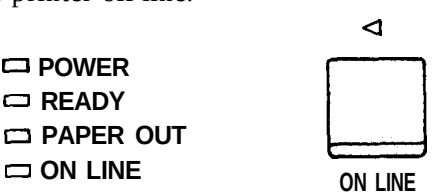
Loading a sheet

Before loading a single sheet, be sure that:

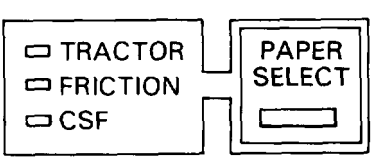
- The printer cover is attached.
- The paper guide is attached, and the paper guide cover is attached and closed.



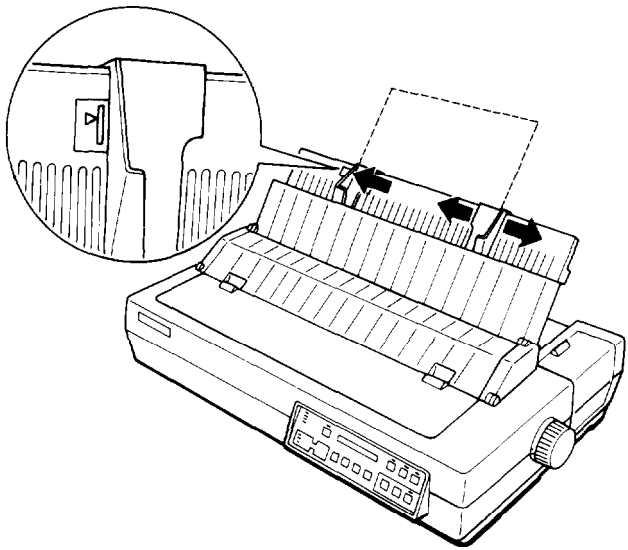
1. Be sure that **the** printer is off line. If it is **not,** press the **ON LINE** button to set the printer off line.



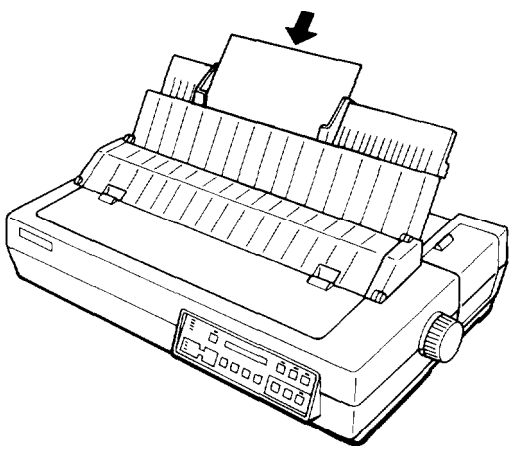
2. Press **the PAPER SELECT** button until the **FRICTION** light comes on.



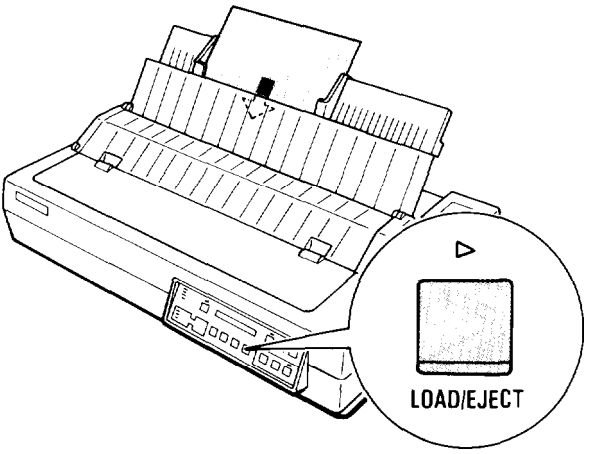
3. Slide the left edge guide until it rests against the guide mark. Next, adjust the right edge guide to match the width of your paper.



4. Slide a **sheet** of paper down between the edge guides until it meets resistance. At this time, the **PAPER OUT** light goes off.



5. Press the **LOAD/EJECT** button once to automatically load the paper.



Note: If the platen turns without loading the paper, completely remove **the** paper and re-insert it more firmly; then press the **LOAD/EJECT** button again.

6. Press the **ON LINE** button to set the printer on line.

WARNING: Never advance the paper using the platen knob except in the case of a paper jam or other paper feed problem. Using the platen knob while the printer is on may damage the printer, and it produces an error message (ERROR12) on the display. To clear this error you must turn the printer off, take out the paper (using the platen knob if necessary), and turn the printer back on.

Press **LOAD/EJECT** to load the paper. If you need to adjust the position of the paper after it is loaded, use **the** micro-adjustment feature described in the section on setting the loading position in Chapter 3.

Reloading during printing

When you print a document more than one page long using single sheet paper, the printer stops printing when it reaches the bottom of the paper. When this happens, either the **ON LINE** light goes off automatically or it may remain on, depending on your application software. If **the ON LINE** light remains on, the first thing you should do is press the **ON LINE** button to take **the** printer off line.

Once the **ON LINE** light is off, remove the sheet that has just been printed (if necessary, press the **FORM FEED** button to eject the page) and load a **new sheet.** Press the **ON LINE** button to start printing the next page and follow any additional prompts from your software.

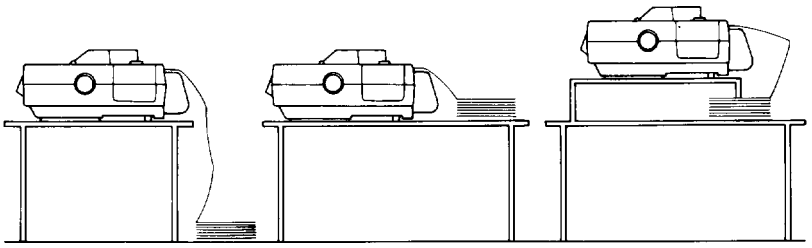
Using Continuous Paper

The tractor built into the LQ-2550 is remarkably easy to load and operate. Its low-profile design takes up little space and **can** handle paper widths from 4 to **16** inches.

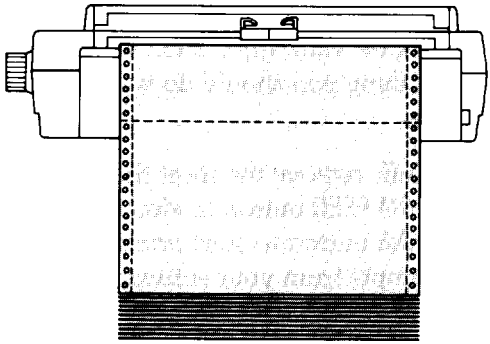
Positioning your continuous paper supply

An important consideration for achieving smooth and accurate paper feeding is the position of your continuous paper supply.

Three ways to position your printer and continuous paper are shown below.



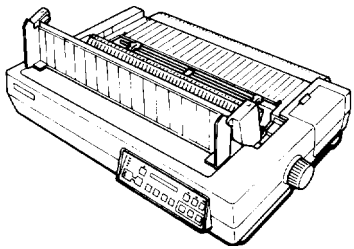
Be sure to align your paper supply with the paper loaded in the tractor so that the paper feeds smoothly into the printer.



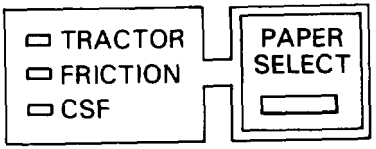
Loading continuous paper

Before loading continuous paper, be sure that:

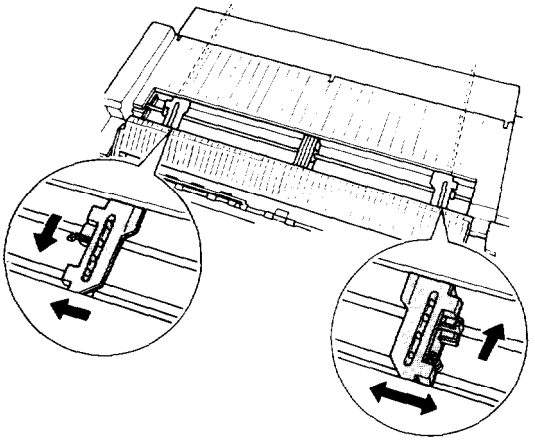
- The printer is turned on.
- The printer cover is attached.
- The paper guide is removed.
- The paper guide cover is attached and fully open from the rear, as shown in the illustration.
- The cable cover is attached.



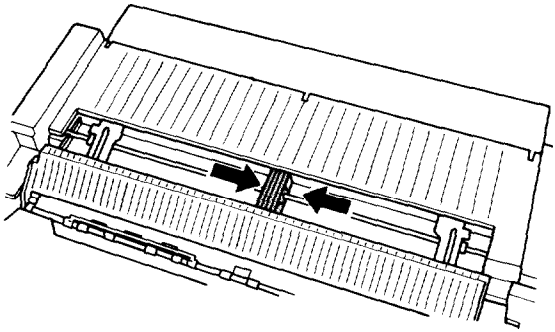
1. Be sure that the printer is off line. If it is not, press **the ON LINE** button to set the printer off line. Then press the **PAPER SELECT** button until **the TRACTOR** light comes on.



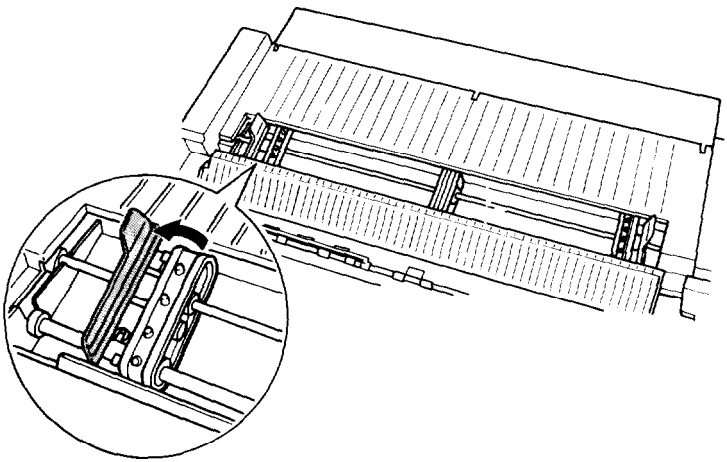
2. Release the sprocket lock levers and slide the left sprocket unit all the way to the left and lock it in place. Next, slide the right sprocket unit to roughly **match the** width of your paper but do not lock it.



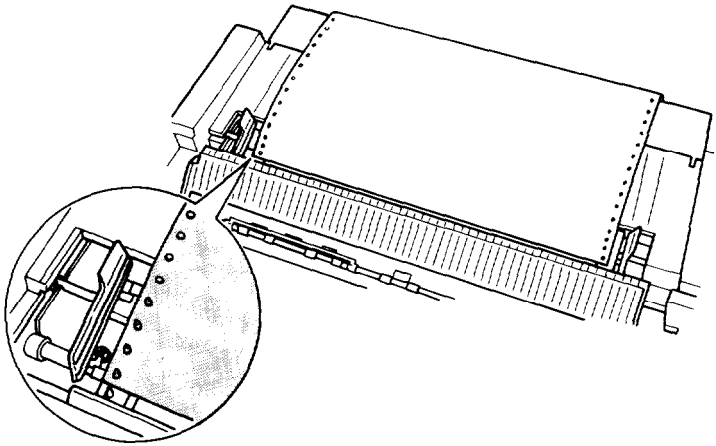
3. Slide the paper support to a point midway between the sprocket units.



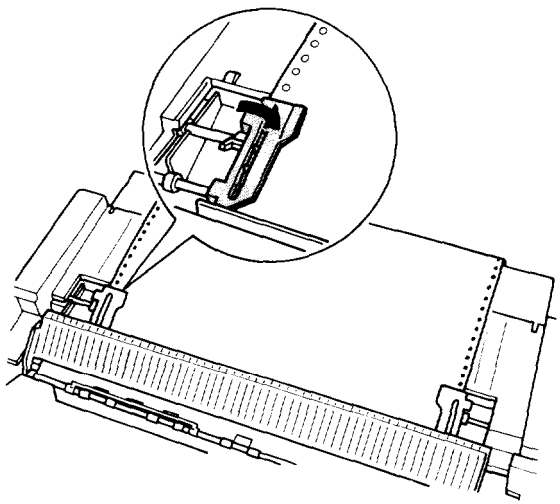
4. Open the sprocket covers.



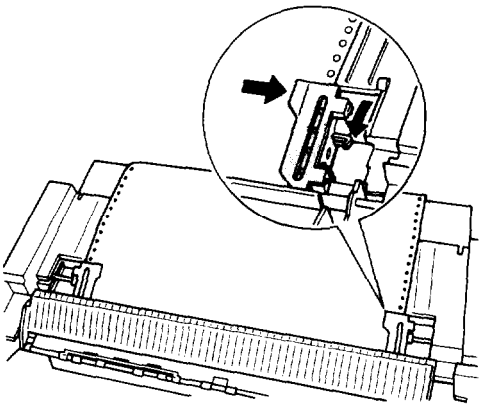
5. Fit the first four holes in the continuous paper over the pins of the sprocket units.



6. Close the sprocket covers.

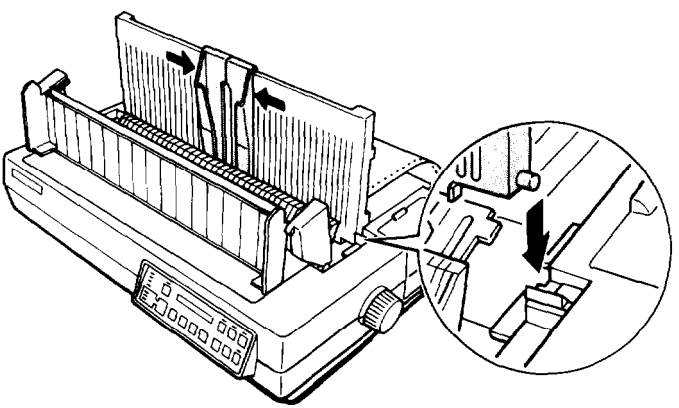


7. Slide the right sprocket unit to a position where the paper is straight and has no wrinkles, and then lock it into place.

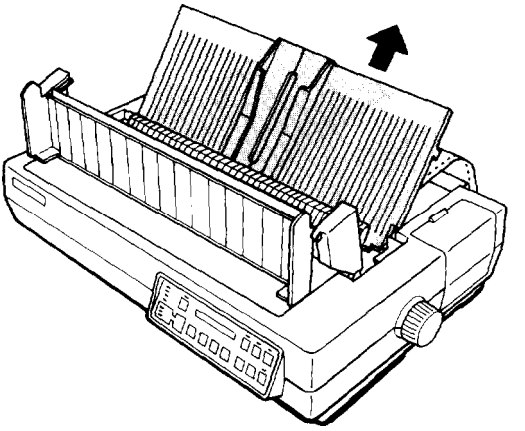


Note: Make sure the first sheet of paper has a clean, straight edge so that the paper can feed smoothly into the printer.

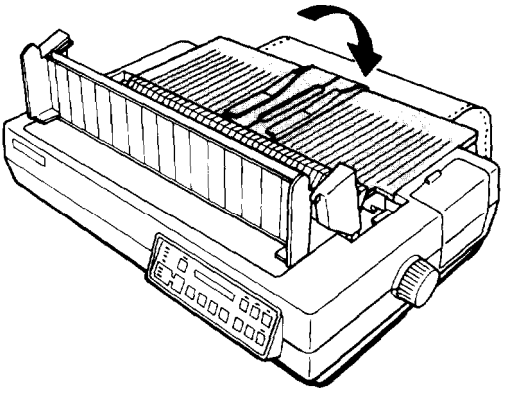
8. Reattach the paper guide. Then slide the edge guides together so that they meet at about the middle of the paper's width.



9. Pull the paper guide in the direction of the arrow in the illustration.

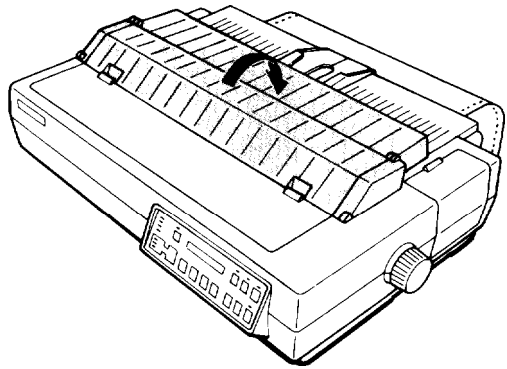


10. Push down the paper guide.

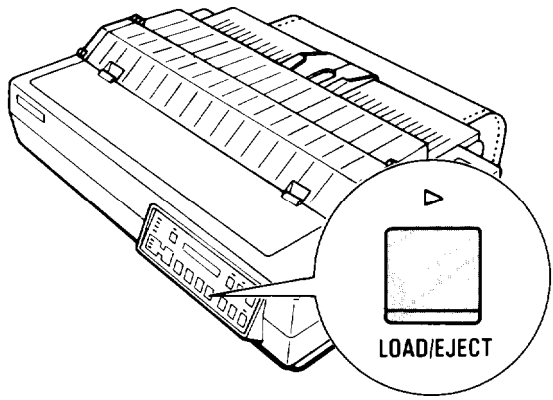


Note: The paper guide prevents outgoing continuous paper from being pulled back into the printer.

11. Close **the** paper guide cover.



12. Press the **LOAD/EJECT** button to feed the paper to **the** loading position.



Note: If you press **the LOAD/EJECT** button when continuous paper is already loaded, **the** paper is reversed to the standby position.

13. Press the ON **LINE** button to set the printer on line.

The printer remembers this loading position and advances each page to the same position. Never adjust the loading position using the platen knob. If you need to adjust the loading position, use the micro-adjustment feature. See the section on setting the loading position in Chapter **3.**

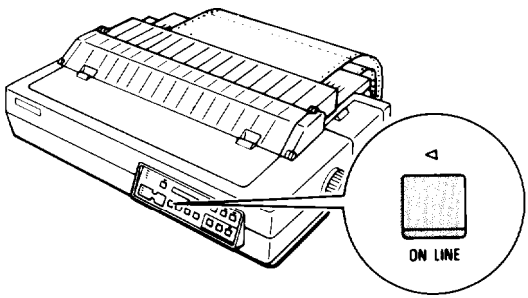
Note: Before you begin printing, be sure to check the page length and skip over perforation settings, and readjust the settings if necessary. See the sections on page length and skip over perforation in Chapter 3.

Also, if you are using preprinted or multi-part forms or labels, or if you wish to obtain the highest quality graphics, it is recommended that you use the optional pull tractor. See the pull tractor section in Chapter 7.

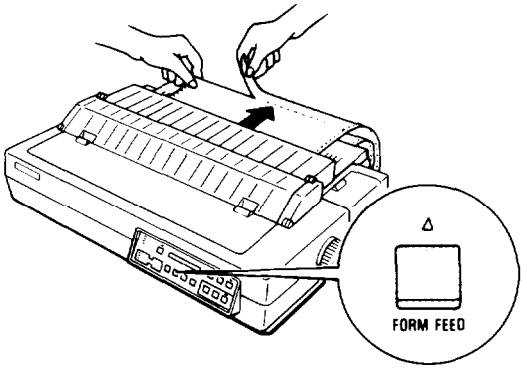
When you have finished printing

When you are ready to tear off the continuous paper printout, you can either use the automatic short tear-off function or use the following steps. (For more information on the short tear-off function, see Chapter **3.)**

1. After printing is completed, set the printer off line.



2. Press the **FORM FEED** button to feed the paper forward. Then tear it off at the perforation.



Note: If the perforation of the paper is not fed past the edge of the paper guide the first time, press the **FORM FEED** button again. Do not use the platen knob to feed the paper.

Reversing the paper to the standby position

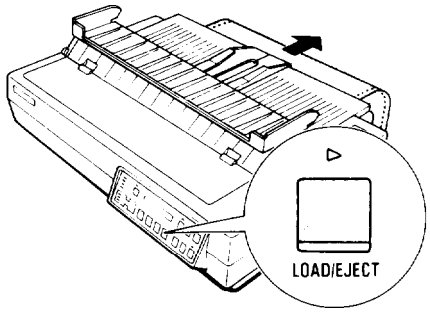
After you have tom off the last page of printed paper, if you wish to reverse-feed the paper remaining in the printer to the standby position, follow the steps below.

When continuous paper is in the standby position, the holes at the top of the first sheet stay fitted over the pins of the sprocket unit. When the paper is in this position, you can switch to single sheet paper (see the instructions in this chapter), reload the continuous paper, or remove the continuous paper.

Before reversing the paper, be sure **that:**

- The printer is turned on.
- The **TRACTOR** light on the control panel is on.

1. Check **to see that** the printer is off line. If it is not, press the **ON LINE** button to set the printer off line.
2. Press the **LOAD/EJECT** button once. This feeds **the** loaded paper backward to its standby position. If the paper does not reach this position, **the** printer briefly displays **Cannot Back Out.** Press the **LOAD/EJECT** button as many times as necessary to back out the paper to its standby position. (Do not use the platen knob to back out the paper.)



Switching between Continuous and Single Sheets

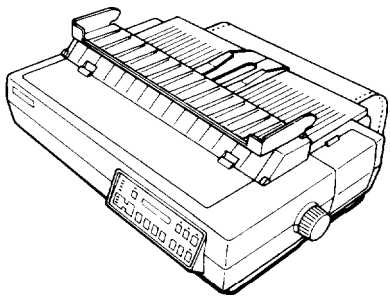
Even with continuous paper loaded in the printer, you can easily switch to single sheet printing without removing the continuous paper from the tractor.

Switching to single sheets

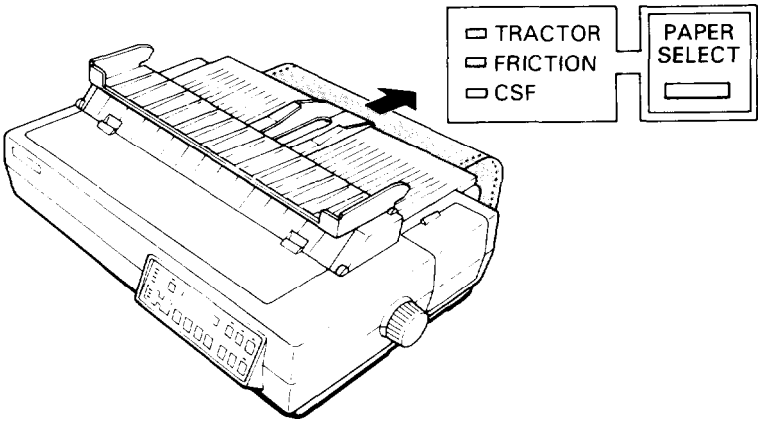
When you are finished printing on continuous paper, you can reverse-feed the paper to a standby position so you can switch to printing with single sheet paper.

Before you start, be sure that:

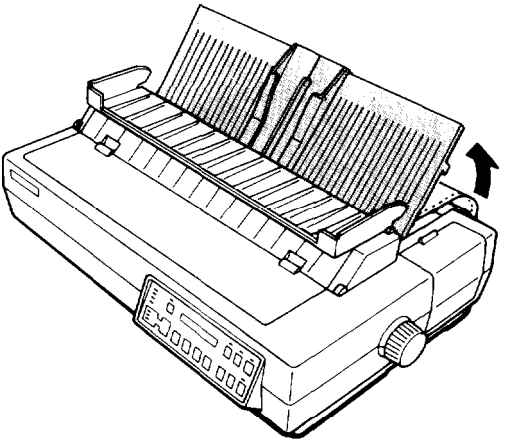
- The printer is off line.
- The paper guide cover is open as shown in the illustration.
- You tear off any printed sheets or extra blank sheets. (Make sure the paper is not advanced past its loading position.)



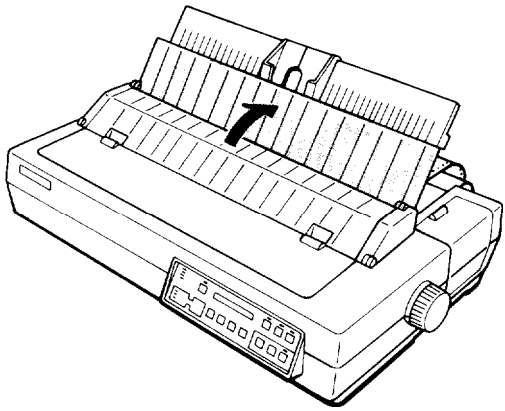
1. Press the **PAPER SELECT** button until the **FRICTION** light comes on. The continuous paper is fed backward automatically to a standby position.



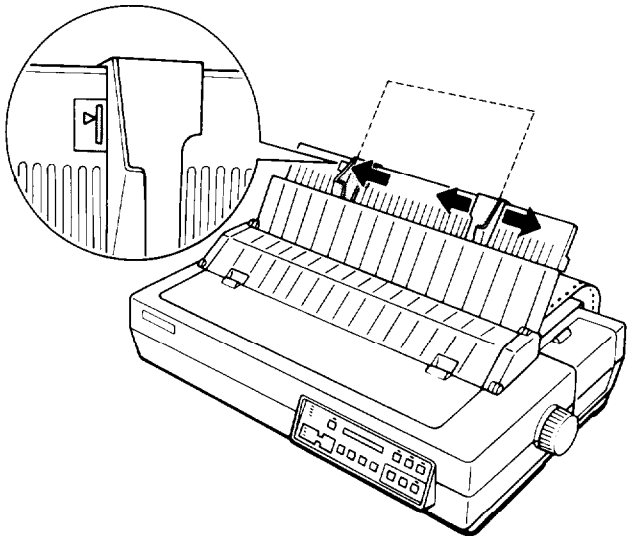
2. Raise **the** paper guide until it locks into place.



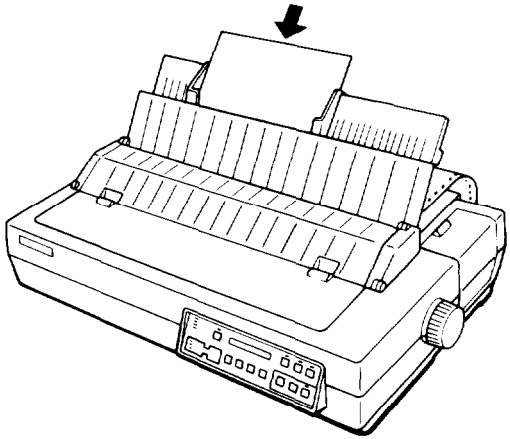
3. Close the paper guide cover.



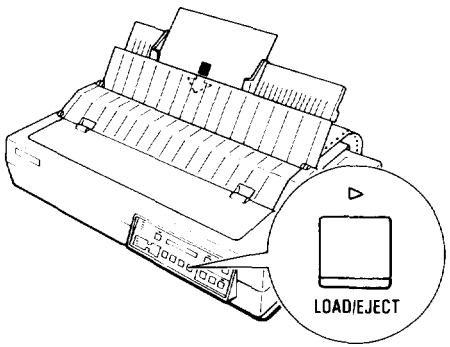
4. Slide the left edge guide until it rests against the guide mark. Next, adjust the right edge guide to match the width of your paper.



5. Slide a sheet of paper down between the edge guides until it meets resistance.



6. Press the **LOAD/EJECT** button once to automatically load **the** paper.



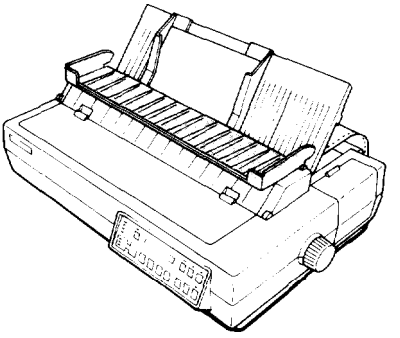
7. Press **the ON LINE** button to set the printer on line.

Switching back to continuous paper

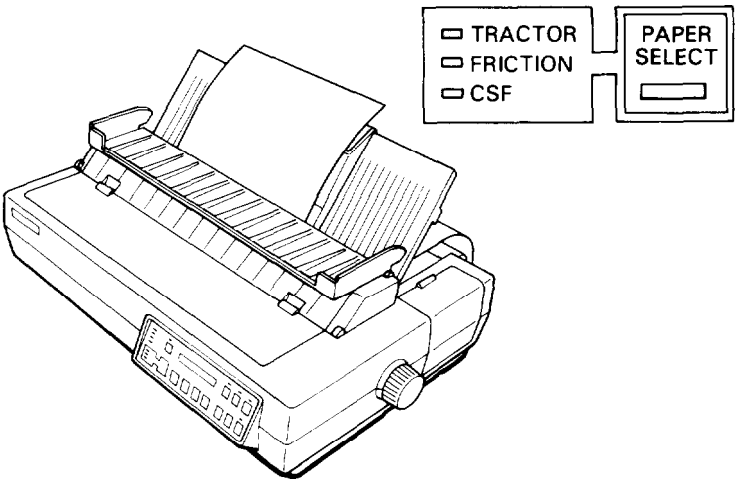
It is also easy to switch back to printing with continuous paper.

Before switching back, be sure that:

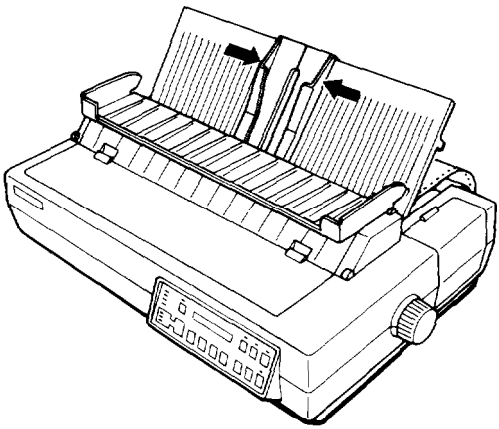
- The printer is off line.
- The paper guide cover is open as **shown** in the illustration.



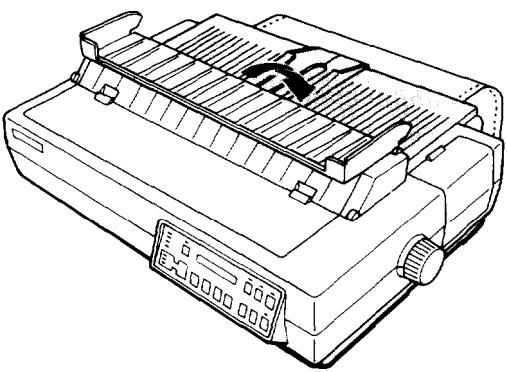
1. Press **the PAPER SELECT** button until the **TRACTOR** light comes on. If a single sheet is loaded, it is ejected automatically and the continuous paper is fed to the loading position.



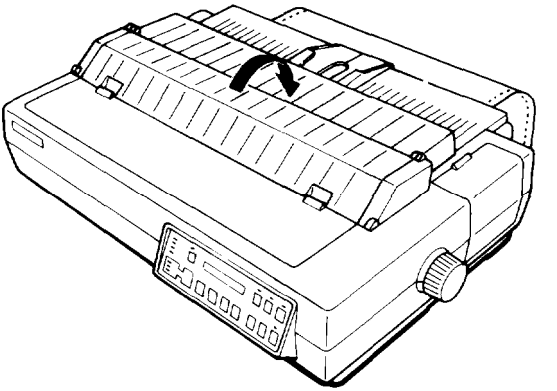
2. Slide the edge guides together so that they meet at about the middle of the paper's width.



3. Lower the paper guide onto the back of the printer.



4. Close the paper guide cover.



5. Press the **ON LINE** button to set the printer on line.

Printing on Special Paper

In addition to using single sheets and continuous paper, your printer can also print on a wide variety of paper types, including multi-part forms, labels, and envelopes. Your printer can sense the paper thickness and width automatically. You need not adjust the paper thickness manually.

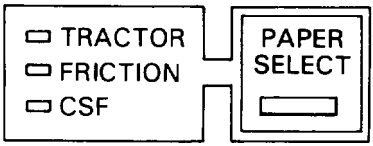
Note: If you are printing preprinted or multi-part forms or labels, it is recommended that you use the optional pull tractor to print. See the pull tractor section in Chapter 7.

Also, when you print on multi-part forms, labels, or envelopes, be sure that your application program settings keep the printing entirely within the printable area. That is, you should not print any closer than one-half inch from either side of the paper for multi-part forms and labels. For information on the printable area for envelopes, see page 2-27.

Multi-part forms

With the built-in tractor unit, your printer can print on continuous multi-part forms. You can use multi-part forms that have up to six parts including the original.

Multi-part paper is loaded the same way as continuous paper. For details, see the section on loading continuous paper in this chapter. Before loading the multi-part forms, press the **PAPER SELECT** button until the **TRACTOR** light comes on.



WARNING: Do not load or print on multi-part forms if the **FRICTION** light or **CSF** light is on.

Labels

If you need to print labels, choose the type of label that is mounted on a continuous backing **sheet** with sprocket holes for use with the tractor. Do not use single sheet labels on a shiny backing sheet because they almost always slip a little if fed by friction alone.

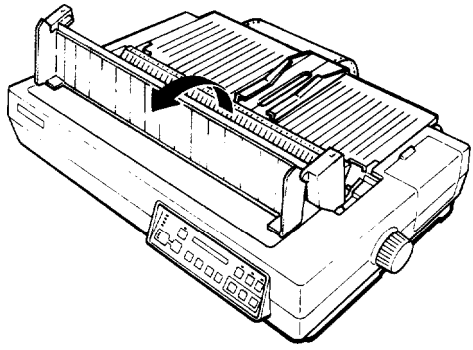
You load labels the same way that you load continuous paper. See the section on loading continuous paper in this chapter.

WARNING: Never feed labels backward through the printer. Labels can easily come off the backing and **jam** the printer. **Also,** never use the **LOAD/EJECT** button to eject labels. If a label does become stuck in the printer mechanism, see your authorized Epson dealer for assistance.

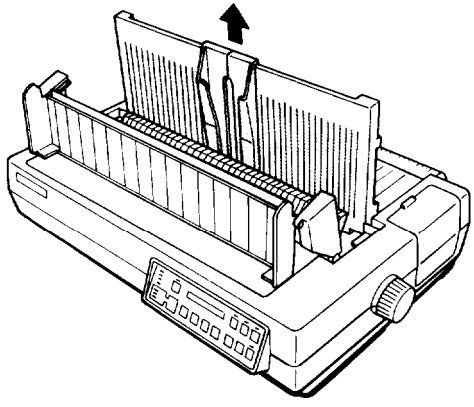
Since labels are especially sensitive to temperature and humidity, always use them under normal operating conditions.

To eject the labels from the printer, follow these steps:

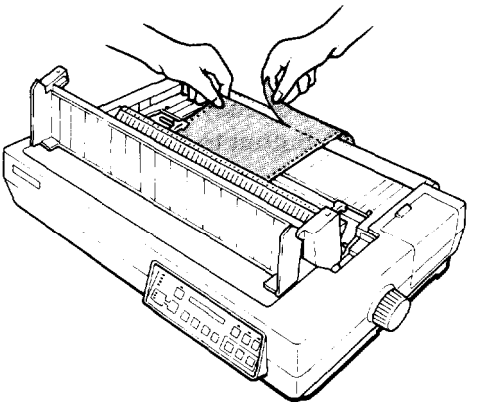
1. Raise the paper guide cover as shown in the illustration.



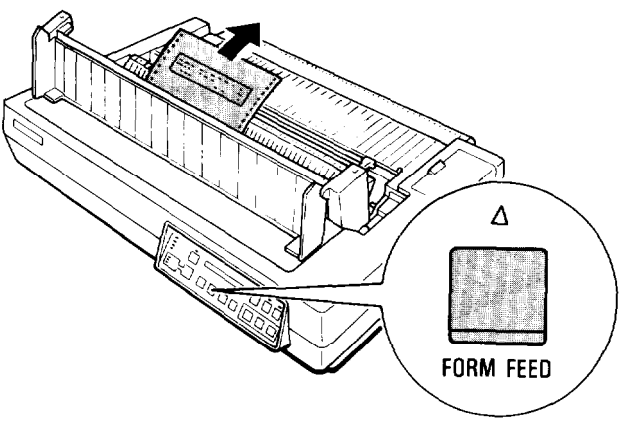
2. Remove the paper guide.



3. Tear off the sheet of labels at the perforation behind the push tractor.



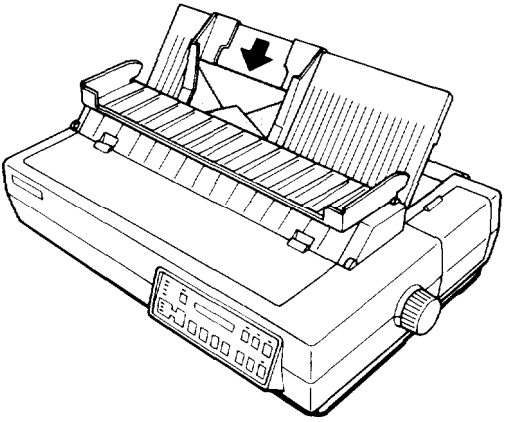
4. Press the ON **LINE** button to set the printer off line. Then press the **FORM FEED** button to eject the labels. (Remember not to use the **LOAD/EJECT** button to eject labels.)



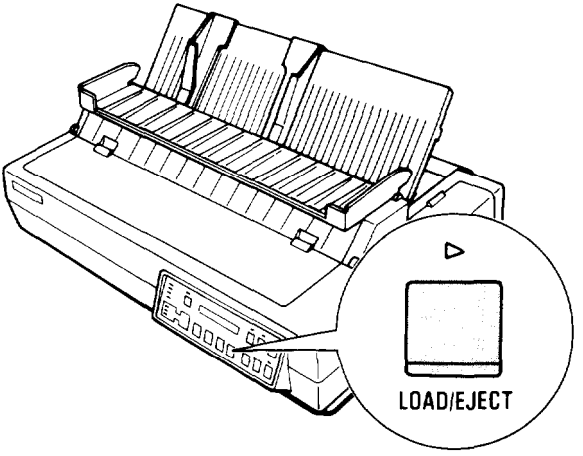
Envelopes

You can print on a variety of envelopes - including air mail, plain, or bond envelopes - using the single sheet loading feature described in this chapter. Chapter 7 describes using envelopes with the cut sheet feeder.

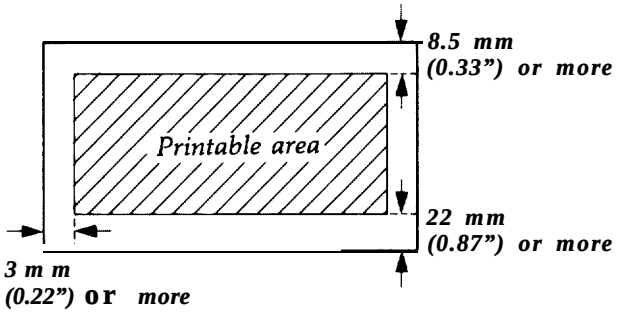
When loading an envelope, you may have to press down on it slightly. Then press **the LOAD/EJECT** button to load the envelope.



If it is necessary to eject the printed envelope, press the **ON LINE** button to set the printer off line. Then press the **LOAD/EJECT** button.



WARNING: When you print on envelopes, be sure that your application program settings keep the printing entirely within the printable area shown below.



Note: If the printed results are faint, use the **PLATEN GAP ADJUST** button to adjust the distance between the print head and the platen.

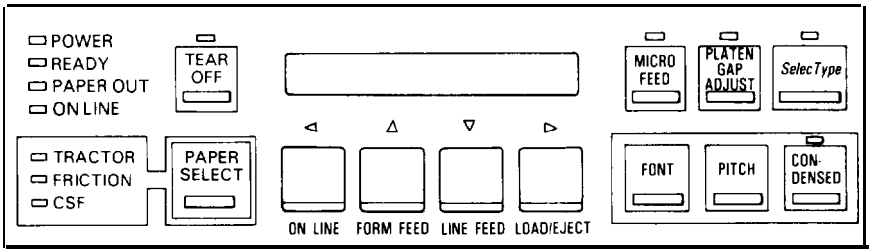
Chapter 3

Using the Printer

Operating the Control Panel

The LQ-2550 control panel is made up of three elements: **the** buttons, indicator lights, and Liquid Crystal Display (LCD). The buttons let you control all of **the** main printer settings and paper handling functions, and the indicator lights and display let you monitor the current status of the printer.

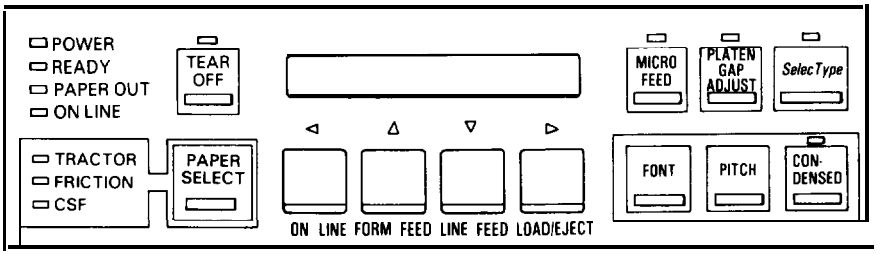
The display



If any of the following states occur, the display shows the corresponding message.

PAPER OUT	The printer is out of paper.
CASE OPEN	The printer cover is open.
HEAD HOT	The print head **has** become hot. When the print head cools, printing resumes and this message clears.
ERROR 10	Paper is jammed. Turn the printer off and remove paper. If no paper is jammed, the printer requires service.
ERROR 11	Paper is crooked. Turn the printer off and remove paper. Turn the printer back on, and reload paper using the **LOAD/EJECT** button.
ERROR 12	Paper was advanced using **the** platen knob. Turn the printer off and remove paper. Turn the printer back on and reload paper using the **LOAD/EJECT** button.

The lights



POWER (green): On when the printer is turned on and power is supplied.

READY (green): On when the printer is ready to accept input data. This light flickers while data is received.

PAPER OUT (red): On when the printer is out of paper.

ON LINE (green): On when the printer can receive and print data from the computer. If this light flickers, the print head is overheating. Printing resumes when the print head cools.

TRACTOR (green): On when tractor feed is selected by the **PAPER SELECT** button.

FRICTION (green): On when friction feed is selected by the **PAPER SELECT** button.

CSF (green): On when cut sheet feeder mode is selected by **the PAPER SELECT** button.

CONDENSED (green): On when condensed mode is selected by the **CONDENSED** button, SelecType setting, or software command.

TEAR OFF (orange): On when tear-off mode is selected.

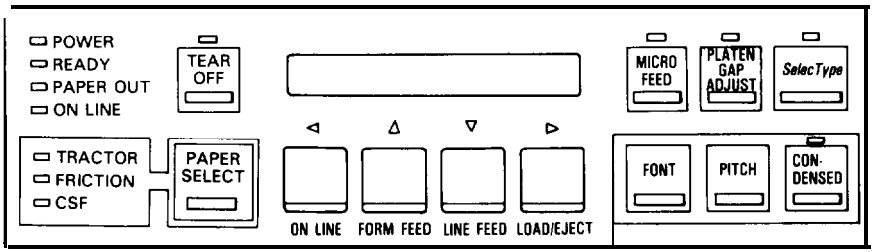
MICRO FEED (orange): On when micro-adjustment feature is selected.

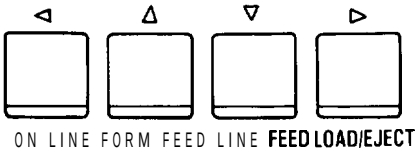
PLATEN GAP ADJUST : (orange) — On when platen gap adjust mode is selected.

SelecType (orange): — On when **SelecType** mode is selected.

◀▲▼▶ (yellow): — These arrows prompt the user when SelecType mode, tear-off mode, micro-feed mode, or platen gap adjust mode is selected.

The buttons



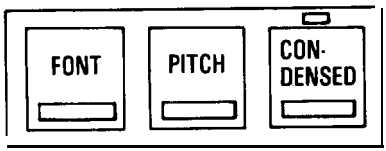


ON LINE: — This button controls the printer's on line/off line status. When the printer is on line, the **ON LINE** light on the left side of the control panel is on and the printer can receive and print data from the computer. In SelecType mode, this button may be used to change the SelecType settings.

FORM FEED: — When the printer is off line, this button ejects a single sheet of paper or advances continuous paper to the top of the next page. In SelecType mode, this button changes the SelecType settings.

LINE FEED: When the printer is off line, this button feeds the paper one line, or held down, feeds the paper continuously. In SelecType mode, this button changes **the** SelecType settings.

LOAD/EJECT: When the printer is off line, this button loads or ejects the paper. In SelecType mode, this button changes the SelecType settings.



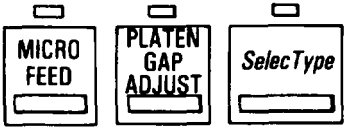
FONT: Hold down this button until the display shows the desired font. Pressing the **FONT** button displays fonts in **the** following order:

Draft, Roman, Sans Serif, Courier, Prestige, Script, OCR-B, OCR-R, ORATOR, ORATOR-S

Orator and Orator-S are only available with the optional Multi-Font Module. See the section on fonts in this chapter for more information.

PITCH: Hold down this button until the display shows the desired pitch. You can choose 10, 12, or 15 CPI (characters per inch) or Proportional. See the section on pitch in this chapter for more information.

CONDENSED: Press this button to select either condensed or normal printing. The selected mode is displayed. In condensed mode, all characters are printed at approximately 60% of their normal width. This mode cannot be combined with 15 CPI (set by the **PITCH** button).

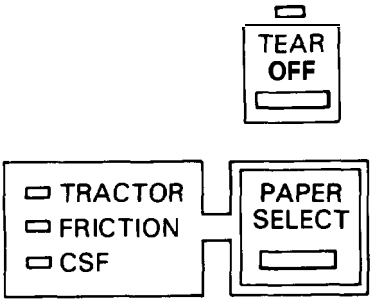


MICRO FEED: Turns on and off the micro-adjustment feature. In micro-feed mode, the **LINE FEED (▼)** button is used to feed **the** paper slightly backward and #he **FORM FEED** (A) button is used to feed the paper slightly forward to adjust the print position, short tear-off position, or loading position. The sections on short tear-off and adjusting the loading position in this chapter have more information on this feature.

PLATEN GAP ADJUST: Selects or deselects the platen gap adjust mode. If the printing is too dark or too faint, you can widen or narrow the platen gap to achieve the desired printing results. When this mode is selected, the display changes to:

Press the **ON LINE (◀)** button to widen the gap between the platen and print head. Press the **LOAD/EJECT (▶)** button to narrow the gap. An increasing number of ▶'s indicates a narrowing gap.

SelecType: Selects or deselects the SelecType mode. When this mode is selected, the **ON LINE** (◀), **FORM FEED(A), LINE FEED** (▼), and **LOAD/EJECT** (▶) buttons can be used as SelecType panel buttons. The display lets you monitor the SelecType settings. See the section on SelecType in this chapter for details.



TEAROFF: Press this button to feed the perforation of continuous paper to the tear-off edge of the printer. After tearing off the paper, press this button again to feed the paper backward to the loading position. You can also make this feature easier to use by setting the **AUTO TEAR OFF** option with SelecType. See the short tear-off section in this chapter for more information.

PAPER SELECT: When the printer is off line, press this button to select the paper handling system. The selected system is shown on the display. The paper handling system is selected in the following order:

Tractor, Friction, CSF Bin 1, CSF Bin 2

Other control panel features

Self test: By holding down the **FORM FEED** button (for draft mode) or **LINE FEED** button (for Letter Quality mode) while you turn on the printer, you can start the printer's self test. The self test printout lets you check the current settings and operating status of the printer. See the section on testing the printer in Chapter 1 for more information.

Data dump: By holding down both the **LINE FEED** and **FORM FEED** buttons while you turn on the printer, you turn on the data dump mode. This feature allows advanced users to find the cause of communication problems between the computer and printer. See the section on the data dump mode in Chapter 6.

SelecType Settings

SelecType on the LQ-2550 brings a new dimension to printing. With SelecType you can control almost every aspect of printer operation.

SelecType lets you:

- Use four preset macros - stored groups of settings that you can recall with the touch of a button
- Replace the preset macros with your own custom-designed macros
- Change up to 17 printer settings from SelecType
- Choose among the LQ-2550's eight built-in fonts
- Print the LQ-2550's settings with the touch of a button
- Monitor the LQ-2550's settings with the LCD display
- Change the LQ-2550's default settings without DIP switches.

The four preset macros cover these general applications: Letter Quality printing/word processing, draft printing/word processing, spreadsheets, and graphics. You can also create your own macros with any of the LQ's settings.

MACRO #l

Preset macro #l is set for Letter Quality printing/word processing in the Roman font. It **can be used for word processing or any application where you want a polished result. You can also use enhancements and print styles, including italic, emphasized, and double-width,**

MACRO #2

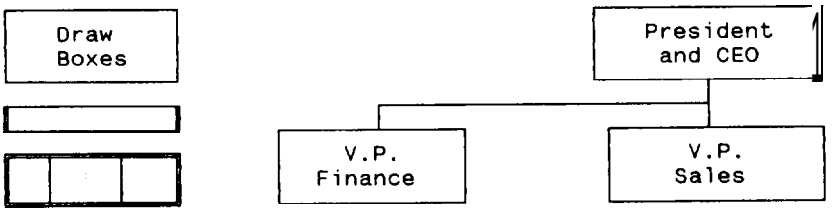
Preset macro #2 is set for draft printing/word processing to produce high-speed, draft quality printing. It can be used for word processing to print rough drafts, or for any job you need printed in a hurry. You can also use enhancements and print styles, including *italic,* emphasized, and d o u b l e - w i d t h ,

MACRO #3

SALES REPORT

	Jan	Feb	Mar	Apr	May	Jun
J. Smith	784	548	475	648	874	654
T. Jones	*714*	750	655	*154*	789	885
L. Williams	756	*152*	*852*	841	740	887

MACRO #4



There are no switches to reset or commands to send. In fact, the LQ-2550 has no DIP switches. You simply load the macro you want, then print. All these functions can be controlled through SelecType.

Using SelecType

To enter SelecType mode, simply press the **SelecType** button.

Before you use SelecType, make sure that the LQ-2550 is not printing. The printer must complete its print job before you enter SelecType. If you have turned the printer off line during a print job, turn the printer back on line and let the LQ-2550 finish printing before you enter SelecType mode.

Note: Your application may override your Selectype settings. Some application programs are designed to control the same settings you choose with SelecType by sending certain software commands before printing. Because these commands cancel SelecType settings, you should use the program instead of SelecType to select the affected setting.

You can exit SelecType at any time by pressing this button once more. Note that you must exit SelecType before printing a document. If you press the **SelecType** button after you set a macro but before you save it, those settings are temporarily used as current settings until the printer is turned off, but are cleared when the printer is turned back on.

The SelecType main menu lists the five modes that let you control printer functions and operations. The five main menu modes are:

▲LOAD MACRO:	This mode lets you load one of the four macros to accommodate your own printing needs.
▲CHANGE MACRO:	This mode lets you change the current printer settings (such as font and form length), with the option of saving these changes to create your own macros.
▲CHANGE DEFAULTS	This mode lets you define the default settings (such as interface and baud rate) that will be in effect each time you turn on the printer.
▲PRINT OUT SETTINGS:	This mode prints out the current printer settings, the settings for the four macros, and the default settings.
▲CLEAR ALL MACROS:	This mode returns all of the current printer settings, macro settings, and default settings to the preset values.

Following the arrow icons

When you are in the SelecType main menu, an ▲▼ icon precedes the names of each of the main menu modes. This icon indicates that you can change modes by pressing either the ∧ or ▼ button. The ▶ icon to the right of the mode name indicates that you can activate the mode by pressing the ▶ button.

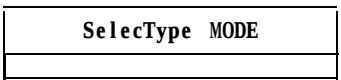
In general, the same applies when you are in a SelecType submenu. The ▲▼ icon indicates that you can choose a different option (shown on the left side of the display, such as **FONT)** by pressing the ∧ or ▼ button. The ▶ icon indicates that you can activate the option to select among its settings (shown on the right side of the display, such as **Roman** and **Sans Serif)** by pressing the ▶ button. Once you have activated an option, you can choose among its settings by pressing the ∧ or ▼ button. You can select a setting by pressing the ◀ button, and exit the option by pressing the ◀ button again.

Selecting a main menu mode

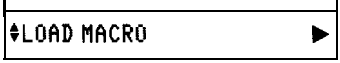
Select one of the five main menu modes as follows:

1. Press the **SelecType** button.

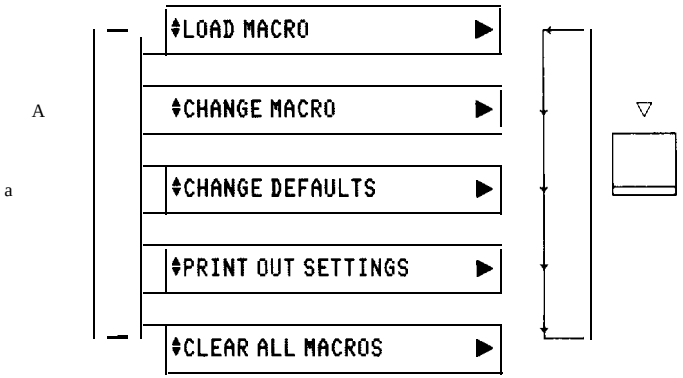
The display briefly shows:



Next, the display changes to:



2. Press the ▲ or ▼ button to shift through the five modes as follows.



The instructions to follow show you how to select settings for the various options available for each main menu mode.

Note: After you have learned how to use the SelecType feature by reading through this chapter, you can use the Quick Reference card at the back of this manual for summary information on SelecType, until you become accustomed to using this feature.

LOAD MACRO

The LOflD **MACRO** mode lets you load one of four preset macros or a macro you have created using the **CHANGE MACRO** mode.

In the following sample, the settings of the four preset macros were printed with the PRINT OUT SETTINGS mode.

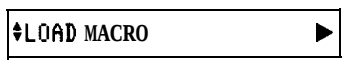
	Macro #1	Macro #2	Macro #3	Macro #4
FONT	Roman	Draft	Draft	Roman
PITCH	10CPI	10CPI	10CPI	10CPI
CONDENSED	Off	Off	On	Off
FORM LNG				
Tractor	66LINE	66LINE	66LINE	51LINE
CSF bin1	132LINE	132LINE	132LINE	132LINE
CSF bin2	132LINE	132LINE	132LINE	132LINE
1" SKIP	Off	Off	Off	Off
AUTO TEAR OFF	Off	Off	Off	Off
LEFT MARGIN	0	0	0	0
RIGHT MARGIN	136	136	136	136
CG TABLE	Italic	Italic	Italic	Italic
COUNTRY	USA	USA	USA	USA
PRINT DIR.	Bi-d	Bi-d	Bi-d	Bi-d
COLOR	Black	Black	Black	Black

When you turn the printer on, one. of the four macros is loaded as the default macro. When you load another macro, the new macro's settings become the printer's current settings.

To load a macro, perform the following steps.

1. Select the LOAD MACRO mode from the SelecType main menu. (See the instructions for selecting a main menu mode in the previous section.)

   The display shows:



2. Activate the LOAD MACRO mode by pressing the ▶ button directly beneath the display.

   These two screens are alternately displayed:

3. Select the number of the macro to be loaded **(1-4)** by pressing the ▲ or ▼ button.

4. Press the ▶ button to load the selected macro. (To abort the load macro operation, press the ◀ button.)

If you have loaded a macro, the display briefly shows:

```
MACRO #n LOADED
```

Next, the display changes to:

```
↕LOAD MACRO                ▶
```

You are now back at the SelecType main menu.

5. To switch to one of the other main menu modes, press the ▲ or ▼ button. If you wish to exit SelecType mode, press the **SelecType** button.

CHANGE MACRO

The **CHANGE MACRO** mode lets you change the settings of whichever macro is currently loaded. It also gives you the option of saving the settings as any of the four macros.

The settings available in **CHANGE MACRO** mode are listed below.

FONT	**Roman, Sans** Serif, **Courier**, Prestige, **Script, OCR-B, OCR-A, Draft., Orator** (optional), **Orator-S** (optional)
PITCH	**10** CPI, 12 CPI, 15 **CPI***, Proportional* * Some fonts cannot be printed in **15** CPI or proportional spacing. In this case, the pitch is not displayed.
CONDENSED	**On, Off**
FORM LENGTH*	**Tractor** — 24 lines to 132 lines **CSF Bin** 1 — 24 lines to 132 lines **CSF Bin** 2 — 24 lines to 132 lines * The line spacing is in **1/6th of an inch units.**
1" SKIP	**On, Off**
AUTO TEAR OFF	**On, Off**
LEFT MARGIN*	0 to 80 columns

RIGHT MARGIN*	1 to 136 columns *The column spacing is based on a pitch of 10 CPI.
CG TABLE	Italic, Graphic, Download
COUNTRY	USA, France, Germany, UK, Denmark 1, Sweden, Italy, Spain 1, Japan, Norway, Denmark 2, Spain 2, Latin America, Korea, Legal
PRINT DIR.	Bi-directional, Uni-directional
COLOR	Black, Magenta, Cyan, Violet, Yellow, Red, Green

The changes you make are temporarily made to the current macro's settings (until you turn off the printer), but you can save the changes as any of the four macros. Changed macros that you save remain in effect even after you turn off the printer.

The following example describes the procedure for changing the FONT option, but the other options (with the exception of FORM LENGTH) can be changed in the same manner. (The procedure for setting FORM LENGTH is described later in this chapter.) The displays shown may be different if your printer's preset settings have been changed.

Note: The following options are described in more detail later in this chapter: FORM LENGTH, 1"SKIP, AUTO TEAR OFF, FONT, PITCH, COUNTRY, and CGTABLE.

To change and save a macro, perform the steps described below.

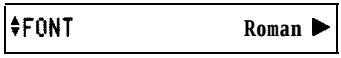
1. Select the CHANGE MACRO mode from the SelecType main menu. (See the instructions for selecting a main menu mode earlier in this chapter.)

   The display shows:

2. Activate this mode by pressing the ▶ button directly beneath the display.

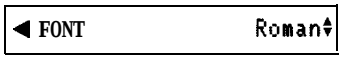
   The display changes to:

   Note: The ▲ icon preceding **FONT** indicates that you can change to one of the other options, such as right margin or color, by pressing the ▼ or A button to display the option.

3. To select a font, press the ↗ button.

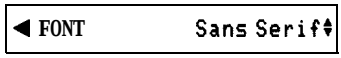
   The display changes to:

4. Press the ▼ button to shift through the available fonts. (Press the ▲ button to shift through the fonts in reverse order.)

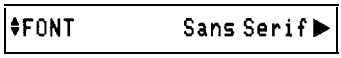
   For the purposes of this example, display Sans **Serif** by pressing the ▼ button.

   The display changes to:

5. Press the ◀ button to select Sans Serif.

   The display changes to:

   Note: At this point you can again change the option at the left side of the display by pressing the ▲ or ▼ button. If you do this, begin again at step 3 to change the settings for the option.

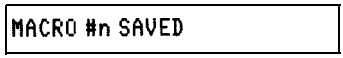
6. **Press** the ◀ button again to exit the font selection process. These two screens are alternately displayed:

7. Press the ▲ or ▼ button to select the number of the macro to be saved. You can choose a number from 1 to 4.

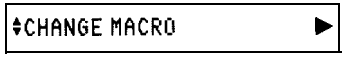
8. Press the ▶ button to save the macro.

   (If you do not wish to save your changes to a macro, press the ◀ button to abort. When you abort, the settings you select remain in effect only until you turn off your printer.)

   If you save the macro, the display briefly shows:



   Next, the display changes to:



   You are now back at the SelecType main menu.

9. To switch to another main menu mode, press the ▲ or ▼ button. If you wish to exit SelecType mode, press the **SelecType** button.

   Whenever you wish to use a macro that you **have** changed and saved, you can load it using the LOAD MACRO mode. Your changed macro is saved even when you turn off the printer.

CHANGE DEFAULTS

The defaults are the settings in effect when you turn the printer on. The following is a list of possible default settings for the LQ-2550.

INTERFACE	Parallel, Serial
BAUD RATE*	300, 600, 1200, 2400, 4800, 9600, 19288 BPS

*Displayed only when the serial interface setting is selected

PARITY *	None, Even, Odd, Ignore
AUTO LINE FEED	On, Off
DC1/DC3	Disable, **Enable**
DEFAULT MACRO	#1, #2, #3, #4

*Displayed only when the serial interface setting is selected

The LQ-2550 comes with preset default values, which can be printed out using the PRINT OUT SETTINGS mode. These default values are shown below.

	Default setting
INTERFACE	Parallel
BAUD RATE	* 9600RPS
PARITY	* None
AUTO LINE FEED	Off
DC1/DC3	Disable
DEFAULT MACRO	#1

If your computer has a parallel interface, the preset defaults should work correctly in most cases. You may wish to change the **DEFAULT MACRO** settings, however, **to match** your usual style of printing. Here are a few additional tips on setting the defaults.

- **INTERFACE:** If your computer has a serial interface, you need to change the interface setting to **Serial.** (If you are using an optional interface board, be sure that the interface setting is **Parallel**, regardless of what type of interface it actually is. See the section on interface boards in Chapter 7 for more information.)
- **BAUD RATE, PARITY:** Set these only if you are using the serial interface. (Be sure to first set the interface setting to **Serial**. BAUD RATE and PARITY do not display in SelecType unless the interface is set to **Serial**.) Check your computer manual for **the** correct baud rate and parity settings. Your computer and printer should be set to the same baud rate and parity.

- **AUTO LINE FEED:** This setting should remain at its default value (**Off**) in most cases. Most applications send automatic line feeds at the end of every line. If all of the lines are printing on top of each other, then set **AUTO** LINE **FEED to On**.

- DC 1 **/DC3:** This setting should also be left at its default value **(Disable)** in most cases. See these codes in Chapter 8 for more information.

- **DEFAULT MACRO:** This setting controls which macro is loaded when you turn on the printer.

To change and save the default settings, perform the steps listed below. The following example describes the procedure for changing the interface, baud rate, and parity for a serial interface, but all the other options can be changed in the same manner. If you are changing only one option, follow steps 1 — 4 and 13 — 17 only.

The displays shown may be different if your printer's preset settings have been changed.

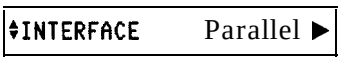
Note: Your new default settings do not take effect until you turn **the** printer off and then back on.

1. Select the **CHANGE DEFAULTS** mode from the SelecType main menu.

   The display shows:

2. Activate this mode by pressing the ▶ button directly beneath the display.

   The display changes to:



Note: If you wish to change an option other than **INTERFACE**, press the ▲ or ▼ button.

3. Press the ▶ button to indicate that you wish to change the setting.

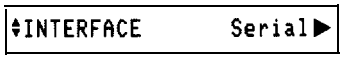
   The display changes to:

4. Press the ▲ or ▼ button to switch the display to Serial.

   The display changes to:

5. Press the ◀ button.

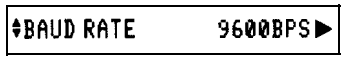
   The display changes to:



Note: If you are changing only one option, skip to step 14 at this point. The other steps show you how to change two other options, following the same method given for the **INTERFACE** option.

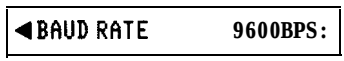
6. Press the ▼ button to switch the display to BAUD RATE.

   The display changes to:



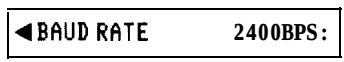
7. Press the ▶ button.

   The display changes to:



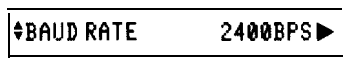
8. Press the ▲ or ▼ button to set the baud rate. In this example, the baud rate is reset to 2400 **BPS.**

   The display changes to:



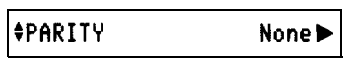
9. Press the ◀ button.

   The display changes to:



10. Press the ▼ button to switch the display to PARITY.

    The display shows:



11. Press the ▶ button.

The display changes to:

◀PARITY	None:

12. Press the ▲ or ▼ button to select the parity. In this example, **Even** parity is selected.

The display changes to:

◀PARITY	Even▲

13. Press the ◀ button.

The display changes to:

▲PARITY	Even▶

14. Press the ◀ button again to exit this option.

The display alternates between these two menus:

SAVE DEFAULTS	

◀ABORT	SAVE▶

15. Press the ▶ button to save the defaults. (If you do not wish to save the setting, press the ◀ button.)

If you saved the defaults, the display briefly shows:

DEFAULTS SAVED

It then briefly changes to:

PLEASE TURN OFF

This reminds you to turn your printer off and back on again to let the changes in default settings take effect.

Finally, it changes to:

▲CHANGE DEFAULTS ▶

You are now back at the SelecType main menu.

16. To switch to another main menu mode, press the ▲ or ▼ button. If you wish to exit SelecType mode, press the **SelecType** button.

17. Turn your printer off and back on again to allow your new default settings to take effect.

PRINT OUT SETTINGS

The PRINT OUT SETTINGS mode gives you an immediate printout of the current printer settings, the four macro settings, and the default settings.

This mode is an invaluable tool that lets you check the macro settings and defaults to decide if there is anything you want to change. It also lets you verify changes you make to these settings with SelecType.

To use this mode, make sure the printer is loaded with paper and is finished printing. Then follow the steps below.

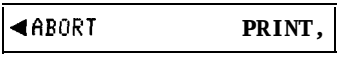
1. Select the PRINT OUT SETTINGS mode from the SelecType main menu.

   The display changes to:

2. Activate this mode by pressing the ▶ button.

   The display changes to:

3. Press the ▶ button to print.

   If you do not wish to print, press the ◀ button. (You can also press the ◀ button to abort while printing is in progress.)

Caution: Always make sure that paper is loaded before you enter the PRINT OUT SETTINGS mode.

When printing is complete, the display changes to:

You are now back at the SelecType main menu.

4. To switch to another main menu mode, press the ▲ or ▼ button. If you wish to exit SelecType mode, press the **SelecType** button.

A sample printout made in the PRINT OUT SETTINGS mode is shown below. This printout shows the preset macros and default settings.

```
            Current setting
FONT                  Roman
PITCH                 10CPI
CONDENSED               Off
FORM LNG
Tractor              66LINE
CSF bin1            132LINE
CSF bin2            132LINE
1" SKIP                 Off
AUTO TEAR OFF           Off
LEFT MARGIN               0
RIGHT MARGIN            136
CG TABLE             Italic
COUNTRY                 USA
PRINT  DIR.           Bi-d
COLOR                Black

                   Macro  #1     Macro #2     Macro #3     Macro #4
FONT                  Roman        Draft        Draft        Roman
PITCH                 10CPI        10CPI        10CPI        10CPI
CONDENSED               Off          Off           On          Off
FORM LNG
Tractor              66LINE       66LINE       66LINE       51LINE
CSF bin1            132LINE      132LINE      132LINE      132LINE
CSF  bin2           132LINE      132LINE      132LINE      132LINE
1"  SKIP                Off          Off          Off          Off
AUTO TEAR OFF           Off          Off          Off          Off
LEFT MARGIN               0            0            0            0
RIGHT MARGIN            136          136          136          136
CG TABLE             Italic       Italic       Italic       Italic
COUNTRY                 USA          USA          USA          USA
PRINT  DIR.           Bi-d         Bi-d         Bi-d         Bi-d
COLOR                Black        Black        Black        Black

            Default setting
INTERFACE          Parallel
BAUD RATE        * 9600BPS
PARITY             *  None
AUTO LINE FEED          Off
DC1/DC3              Disable
DEFAULT MACRO             #1
```

CLEAR ALL MACROS

This mode allows you to return all of the current printer settings, macro settings, and default settings to the preset values. It also gives you the option of clearing only the macro settings or only the default settings.

Caution: This mode erases any custom-designed macros and default settings that you have set and replaces them with the original settings.

To use the CLEAR ALL MACROS mode, follow the steps below.

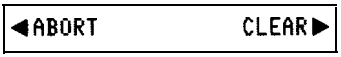
1. Select the CLEAR ALL MACROS mode from the SelecType main menu.

   The display changes to:

2. Activate this mode by pressing the ▶ button.

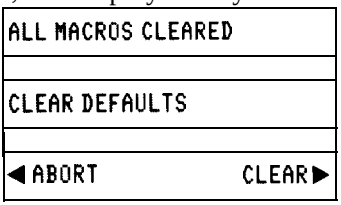
   The display changes to:

   Press the ▶ button to clear all macros and return them to their preset values.

   If you do not wish to clear all macros, press the ◀ button.

   If you chose to clear all macros, the display briefly shows:

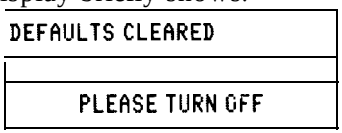
   

   It briefly changes to:

   Then, the display changes to:

3. Press the ▶ button to clear the default settings. (If you do not wish to clear the default settings, press the ◀ button.)

   If you clear the defaults, the display briefly shows:

   It briefly changes to:

   This reminds you to turn your printer off and back on again to let your changes take effect.

   Then, it changes to:

   You are now back at the SelecType main menu.

4. To switch to another main menu mode, press the ▲ or ▼ button. If you wish to exit SelecType mode, press the **SelecType** button.

5. Turn the printer off and back on again to allow the settings to take effect.

Page Length

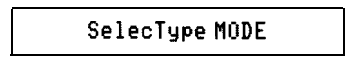
The SelecType function also enables you to set the page length of paper used with the tractor feed system or the cut sheet feeder. The page length can be set in 1/6th of an inch units within a range of ***24*** lines to 132 lines. Be sure that the page length is correctly set for the type of paper feed system you are using. If you are using the cut sheet feeder, the page length is automatically set and memorized when you run the printer's built-in self test. However, you can use this Selectype feature to override this setting.

If you are using friction feed, it is not necessary to set page length with SelecType. However, be sure to select the correct page length with your application software. Also, if possible, select the hand-fed or single sheet mode with your software. If your software gives you the option of sending a form feed at the end of a page, select that capability as well.

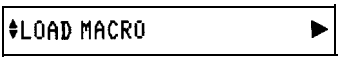
To set the page length using SelecType, follow the steps below to set the **FORM LENGTH** option. The displays shown may be different if your printer's preset settings have been changed.

1. Press the **SelecType** button.

The display briefly shows:

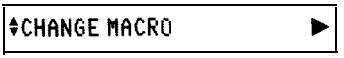


Next, the display changes to:



2. Press the ▼ button.

   The display changes to:

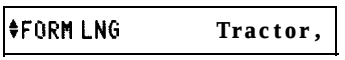


3. Press the ▶ button.

   The display changes to:

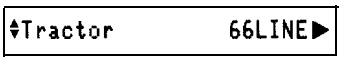
4. Press the ▲ or ▼ button to locate the **FORM LENGTH** option.

   The display shows:



5. Press the ▶ button.

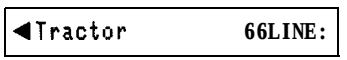
   The display changes to:



6. To change form length for tractor feed, press the ▶ button.

   (To change form length for **the** cut **sheet** feeder, first press the ▼ button. To set CSF bin 2, press the ▼ button **once** more. Then press **the** ▶ button.)

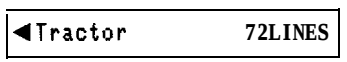
   If you are changing form length for **the** tractor feed, the display changes to:



   (If you are changing form length for a cut sheet feeder, the bin number and form length are displayed.)

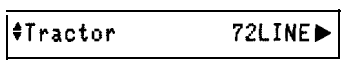
7. Press the ▲ or ▼ button to set the desired number of lines. In this example, the page length is set to 72 lines for the tractor feed.

   The display shows:



8. Press the ◀ button.

   The display **shows:**



9. Press the ◀ button again.

The display changes to:

↕FORM LNG Tractor,

10. Press the ◀ button once more.

These two screens are alternately displayed:

SAVE MACRO #n↕
↓
◀ABORT SAVE▶

11. Press the ▲ or ▼ button to select the number of the macro to be saved (1-4).

12. Press the ▶ button to save the macro. (If you do **not** wish to save your changes to a macro, press the ◀ button.)

If you saved the macro, the display briefly shows:

MACRO #n SAVED

The display then changes to:

↕CHANGE MACRO ▶

You are now back at the SelecType main menu.

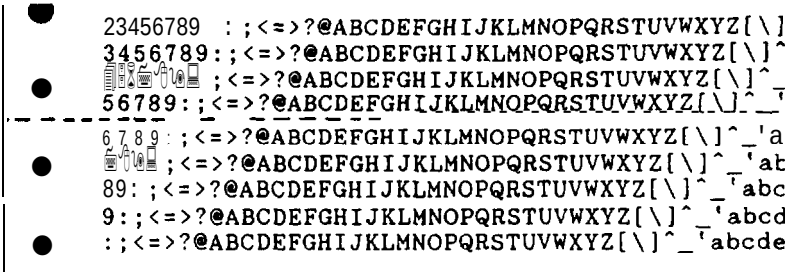
13. If you wish to exit the SelecType mode, press the **SelecType** button.

Skip Over Perforation

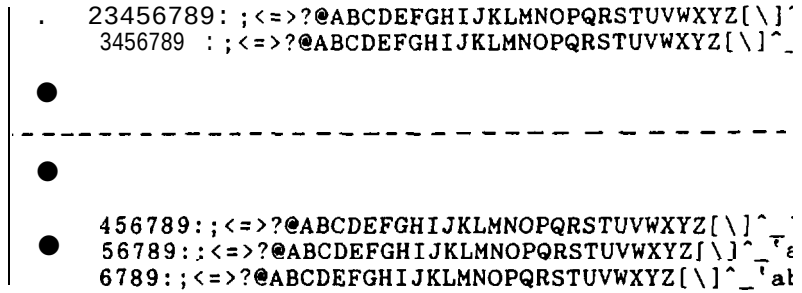
By adjusting the SelecType **1" SKIP** option, you can set skip over perforation to **ON** or **OFF.** If this feature is on when you use continuous paper, a one-inch margin is provided between the last printed line on one page and the initial printable line on the next page so that the printer skips over the perforation. This feature is very convenient if your application program does not provide top and bottom margins.

If you adjust your loading position to the proper point, you can get half of the margin at the bottom of one page and half at the top of the next page as shown in the following illustration.

1" SKIP Off {Skip over perforation OFF)



1" SKIP On (Skip over perforation ON)



To set skip over perforation to provide a one-inch margin using SelecType, set the **1" SKIP** option by following **the** steps in the CHANGE MACRO section earlier in this chapter.

Note: Most application programs take care of top and bottom margins. Therefore, do **not** turn on skip over perforation unless your program does not provide **these** margins.

Setting the Loading Position

The loading position is the position of the paper when it has been automatically loaded by the printer.

The loading position is important because it determines where the printing begins on each page. If **the** printing is too high or too low on the page, change the loading position using **the** micro-adjustment feature described below.

Separate loading positions can be set for single sheets, continuous paper, and sheets loaded by the cut sheet feeder.

WARNING: Never use the platen knob for feeding except in the case of a paper jam or other paper feed problem. Using the platen knob while the printer is on results in an error message (ERROR 12). To clear this error, you must turn off the printer, remove the paper, turn the printer back on, and reload the paper with the **LOAD/EJECT** button. To adjust the loading position always use the micro-adjustment feature.

Until this loading position is reset, the printer remembers this loading position and uses it as a reference point for feeding **the** paper.

The micro-adjustment feature moves the paper 1/180th of **an** inch at a time to make fine adjustments of the loading position. Once you have used micro-adjustment to change **the** loading position of continuous paper, the printer remembers **that** position even after you turn off or initialize the printer. However, **the** printer does not remember the loading position for friction or cut sheet feeder mode.

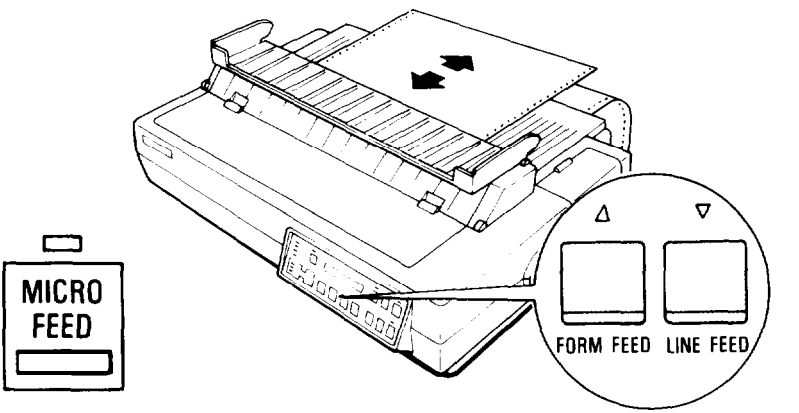
Adjusting the loading position

To adjust the loading position, follow these steps:

1. Load your paper.

2. Press the **MICRO FEED** button to select the micro-feed mode. The **MICRO FEED** light comes on and the display shows TOF ADJUST.(TOF stands for top of form.)

3. Press **the FORM FEED** (▲) button to feed **the** paper forward or the **LINE FEED** (▼) button to feed the paper backward.



Note: The printer beeps when the paper reaches a position that is approximately 1/3 of an inch from the top edge of the paper. You can use this position as a reference point when you adjust the printer's loading position.

4. Once you have adjusted your paper, press the **MICRO FEED** button again to turn off this feature.

Short Tear-Off

There are two ways of operating the short tear-off feature. The easier way is to set the **AUTO TEAR OFF** option with SelecType. When you **have** finished printing and if the perforation is at the top of form position, the printer automatically feeds **the** perforation of the continuous paper to **the** tear-off edge of the paper guide cover so you can tear off **the** last printed sheet. When you resume printing, **the** paper automatically feeds back to the loading position. See the CHANGE MACRO section in this chapter for instructions on setting the AUTO TEAR OFF option.

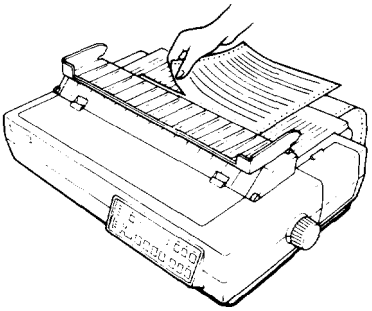
The other way to operate the short tear-off feature is by using the **TEAR OFF** button on the control panel to feed the perforation of your

continuous paper to the tear-off edge of the printer. After tearing off the paper, press the **TEAR OFF** button again to feed the paper backward to the loading position.

WARNING: Do not use the short tear-off feature when you print labels. Be sure that the SelecType AUTO TEAR OFF setting is off. Otherwise, labels may come off the backing and jam the printer.

The short tear-off feature operated by the **TEAR OFF** button is described below.

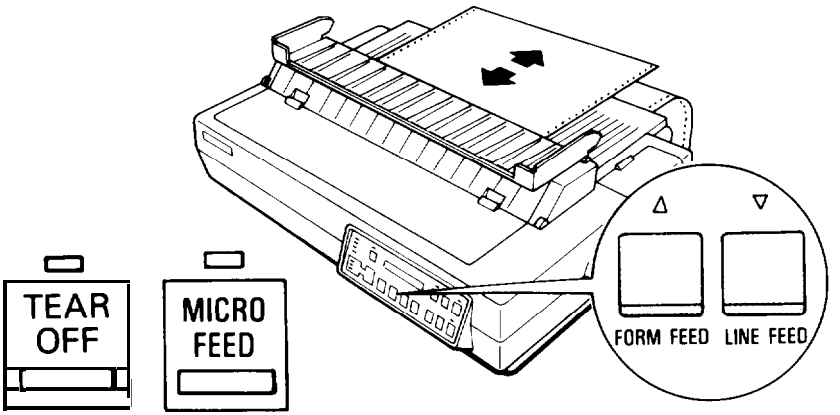
1. When you have finished printing, press the **TEAR OFF** button once to feed the perforation of your page forward to the tear-off edge of the paper guide cover.
2. Tear off the page using the tear-off edge.



3. Press the **TEAR OFF** button again to reverse-feed the paper to its loading position.

If you need to adjust the tear-off position of the perforation to meet the tear-off edge, use the micro-adjustment feature. The same procedure can be used regardless of whether you set the tear-off position using SelecType or with the **TEAR OFF** button.

First, make sure **that** the **TEAR OFF** light is on, and then press the **MICRO FEED** button. The display shows **TEAROFF ADJUST**. Next, adjust the tear-off position in 1/180th of an inch increments by pressing **the FORM FEED** button (▲) to feed the paper forward or the **LINE FEED** button (▼) to feed it backward. After setting the position, press the **MICRO FEED** button again.



Caution: The short tear-off feature can only be used with the built-in tractor feeding system.

Once you use the micro-adjustment feature to set the tear-off position, the printer remembers that position even after it is turned off.

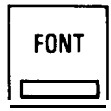
Selecting Typestyles

Your printer can produce a wide range of typestyles by using different fonts, pitches, widths, and other print variations. You can select typestyles in three different ways: by using software commands, by using SelecType, or by using other features available on the control panel. This section describes how to select a typestyle using the **FONT, PITCH,** and **CONDENSED** buttons **on the** control panel.

The settings you select using the control panel do not remain valid once the printer is turned off. Also, commands from your application program temporarily override these control panel settings.

Fonts

Your printer has eight built-in fonts and, with the optional Multi-Font Module, two additional fonts are available. To select a font, hold down the **FONT** button until the display shows the desired font.



The following samples show the character set available for each font.

DRAFT

```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
wxyz{|}~ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíó
úñÑªº¿⌐¬½¼¡«»
```

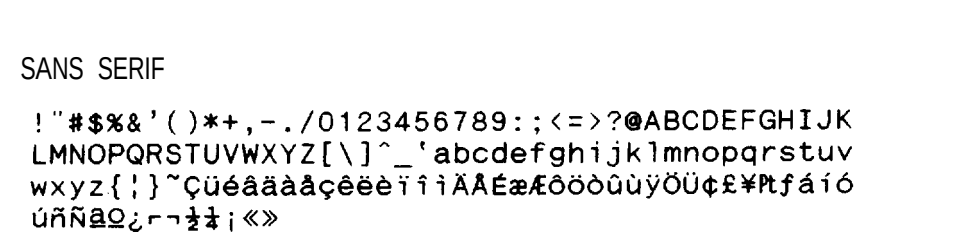
We've just seen your excellent ad for **miniature zebras** in a recent back issue of Trader's Times.

ROMAN

```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
wxyz{|}~ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíó
úñÑªº¿⌐¬½¼<<>>
```

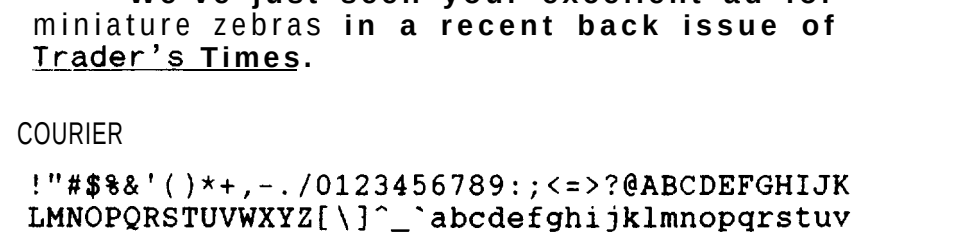
We've just seen your excellent ad for **miniature zebras** in a recent back issue of Trader's Times.

SANS SERIF



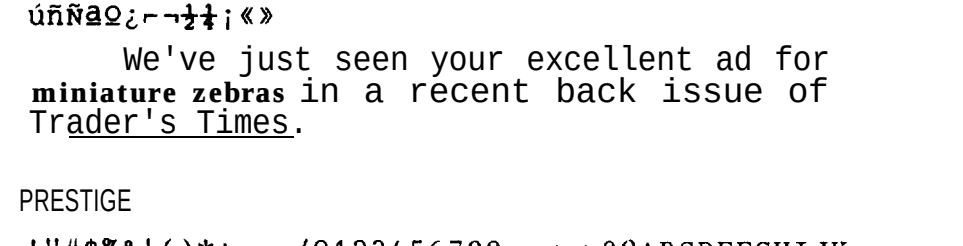
We've just seen your excellent ad for miniature zebras **in a recent back issue of** Trader's Times.

COURIER



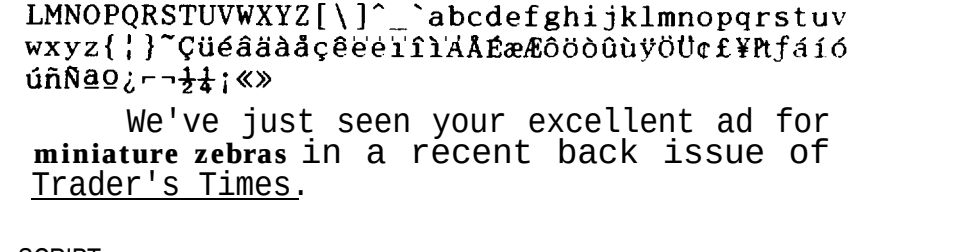
We've just seen your excellent ad for **miniature zebras** in a recent back issue of Trader's Times.

PRESTIGE



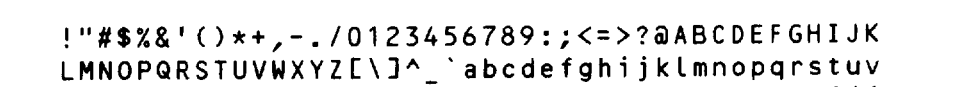
We've just seen your excellent ad for **miniature zebras** in a recent back issue of Trader's Times.

SCRIPT



We've just seen your excellent ad for **miniature zebras** in a recent back issue of Trader's Times.

OCR-B

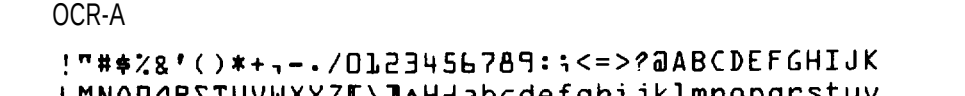


We've just seen your excellent **ad for miniature zebras in a recent back issue of Trader's Times.**

OCR-A

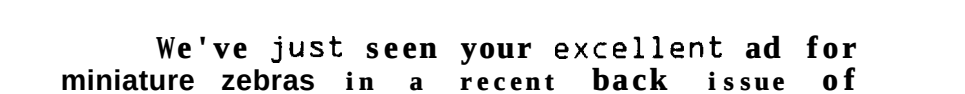
We've just **seen your** excellent **ad for miniature zebras in a recent back issue of Trader's Times.**

ORATOR



WE'VE JUST SEEN YOUR EXCELLENT AD FOR MINIATURE ZEBRAS IN A RECENT BACK ISSUE OF TRADER'S TIMES.

ORATOR-S



We've just seen your excellent ad for miniature zebras in a recent back issue of Trader's Times.

Draft mode uses fewer dots per character for high-speed printing, which makes it ideal for rough drafts.

The other fonts are printed in Letter Quality (LQ) mode. Letter Quality fonts take a little longer to print, but produce fully formed characters for presentation-quality documents.

Pitch

For most of the eight built-in fonts, you can choose a fixed character pitch of 10, 12, or 15 characters per inch (CPI), or proportional spacing.

To select a pitch, hold down **the PITCH** button until the display shows the desired pitch.

Some of the fonts do not offer all pitches. See the table below.

Draft	10, 12, 15
Roman	10, 12, 15, Proportional
Sans Serif	10, 12, 15, Proportional
Courier	10, 12, 15, Proportional
Prestige	10, 12, 15, Proportional
Script	10, 12, 15, Proportional
OCR-A	10, 12, Proportional
OCR-B	10, 12, Proportional
ORATOR	(Optional)10
ORATOR-S	(Optional)10

Use Roman or **Sans** Serif for the best proportional spacing.

The following printout compares the fixed pitch settings.

```
This is 10 pitch printing.
This is 12 pitch printing.
This is 15 pitch printing.
```

For the fixed pitch settings **(10, 12,** and 15 CPI), each character is given an equal amount of space. For proportional spacing, character width varies from one character to the next. For example, a narrow letter like i receives less space than a wide letter like W. Proportional pitch produces text that is easier to read.

The following printout compares a fixed pitch (10 CPI) spacing with proportional spacing.

```
This is 10 pitch printing.
This is proportional spacing.
```

Condensed mode

In addition to the three fixed pitches and proportional spacing, you can use the condensed mode to change the character size. In condensed mode, characters are approximately **60%** of the width of normal characters. Thus, it is very useful for spreadsheets and other applications where you need to print the maximum amount of information on a page. The **10** CPI, **12** CPI, and Proportional pitches can be condensed; **15** CPI cannot be.

To select condensed mode, press the **CONDENSED** button so that the green light comes on. To turn off condensed mode, press the button again.

Condensed 10 cpi gives you more characters on a line,
Condensed 12 cpi gives you even more!

Choosing an International Character Set

The capability to select an international character set provides you with a range of characters and symbols used in other languages. By using the SelecType **COUNTRY** option, you can select one of fourteen international character sets or the Legal characters. See the table below.

International character sets

Country	ASCII code (hex)											
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
0 U.S.A.	#	$	@	[	\	]	^	`	{	¦	}	~
1 France	#	$	à	°	ç	§	^	`	é	ù	è	¨
2 Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
3 U.K.	£	$	@	[	\	]	^	`	{	¦	}	~
4 Denmark I	#	$	@	Æ	0	A	^	`	æ	'0	å	~
5 Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
6 Italy	#	$	@	°	\	é	^	ù	à	ò	è	ì
7 Spain I	₧	$	¡	¡	Ñ	¿	^	`	¨	ñ	}	~
8 Japan	#	$	@	[	¥	]	^	`	{	¦	}	~
9 Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
10 Denmark II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11 Spain II	#	$	á	¡	Ñ	¿	é	`	í	ñ	ó	ú
12 Latin America	#	$	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú
13 Korea	#	$	@	[	₩	]	^	`	{	¦	}	~
64 Legal	#	$	§	°	′	″	¶	`	©	®	†	™

To select the desired international character set using SelecType, set the COUNTRY option by following the steps in the CHANGE MACRO section earlier in this chapter.

Choosing a Character Table

The SelecType **CG TABLE** setting lets you select the Epson Extended Graphics character table, **the** italics character table, or the download character table. (CC stands for Character Generator.)

The Epson Extended Graphics character table contains graphics characters (for printing lines, comers, and shaded areas), international characters, Greek characters, and mathematical symbols.

If you have an IBM® or compatible computer, select the Epson Extended Graphics table when you wish to print the graphics characters as they are displayed on the screen. Since the character table setting affects only the upper half of the character table, you can still print text if you have selected the Epson Extended Graphics table.

Note: See Appendix B for more information on character tables.

To re-map any downloaded characters from the positions **0-127** to the positions **128-255,** select the download character table. (See Chapter **4** for more information on user-defined characters.)

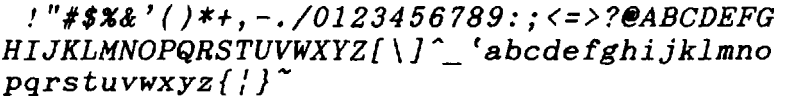
Selecting the italics table defines the upper half of the character table as italic characters. However, you can print italics even if you choose the Epson Extended Graphics character set, simply by using the ESC **4** command. (See Chapter 8.) If your application program prints graphics characters when you select italic characters, switch to the italic character table.

If you select the Epson Extended Graphics character set, you might need to **choose** a different printer from your program's printer installation routine (see Chapter **4).** Your first choice should still be the **LQ-2550** and your second choice the **LQ-2500.** Your third choice should be the LQ-800/1000 printer equipped with the ESC/P identity module. The second and third choices give you the same character and command set found on the LQ-2550.

If none of these printers is listed, you should contact the program's manufacturer to find out whether an update is available.

Sample printouts of the italic characters and the Epson Extended Graphics characters are shown below.

Italics



Epson Extended Graphics

The character tables are presented in Appendix B. To select the italic character table, Epson Extended Graphics character table, or download character table using SelecType, set the **CGTABLE** option by following the steps in the CHANGE MACRO section earlier in this chapter.

Chapter 4

Using Software and Graphics

Using the LQ-2550 with Application Programs

Now that you've set up and tested the printer, you need to start using it with your application programs.

Most application programs let you specify the type of printer you're using so that the program can take full advantage of the printer's features. Many programs provide an installation or setup procedure that presents a list of printers to choose from. If your application program has a printer selection menu, use the instructions below.

Using printer selection menus

If your software has a printer selection menu, simply choose LQ-2550. If the menu does not list this printer, choose one of the following. They are listed in order of preference.

LQ-2500
LQ-1050 (LQ-850)
LQ-1000 (LQ-800)
LQ-500
LQ-1500

If none of these printers is listed, choose the first one available of the following: LQ, EX, JX, FX, LX, RX, MX, Epson printer, standard printer, draft printer.

If you plan to use color, choose either the LQ-2550 or the LQ-2500.

To use all the features of the LQ-2550, it is best to use a program with the LQ-2550 on its menu. If your program does not list the LQ-2550, contact the software manufacturer to see if an update is available.

A quick test

After setting up your application program, print a sample document to make sure the program and the LQ-2550 are communicating properly. If the document doesn't print correctly, recheck the program's printer selection and installation procedure. If you're still having trouble printing, consult the troubleshooting section in Chapter 6.

Using word processors

Word processors usually let you use a fixed set of printer features by placing markers around the text to be altered. When the document is printed, the markers are recognized and translated into suitable commands for your printer. On your screen some programs show the markers; others display the text as it will appear-for example, in bold or italics. This method is normally restricted to features that can be found on almost all printers, such as bold and underlining.

Some word processing programs also let you insert printer commands in your text. These commands may or may not be visible on your screen. This method has the advantage of allowing you to use any printer command, not just a limited set. To make use of it, however, you need to understand how to use your printer's commands. Check the manual for your word processor to see if you can place printer commands in your text, and then see the section in this chapter on computer-printer communications.

Using spreadsheets

Although spreadsheets seldom use as many printing styles as word processors, they do have some very specific requirements.

If your spreadsheet program provides a list of printers, use the list on page 4-2 to find the proper selection. If your spreadsheet doesn't have a printer setup routine, read the program's manual carefully for information on printing.

A major concern for printing spreadsheets is the width of the printer. The LQ-2550 is a 136-column printer. You can, however, increase the number of characters on a line by selecting 12 cpi, condensed mode, or both from the SelecType control panel. The table below shows you many characters you can fit on a line using these options. If your spreadsheet asks the number of columns your printer can print, decide which mode you will use and supply the appropriate number from this table.

Typestyle	Max. char./line
Normal (10 cpi)	137
12 cpi	163
Condensed	233
12 cpi condensed	272

Unlike word processors, spreadsheet programs usually don't let you change printer commands within a spreadsheet. Instead, one style or mode of printing is used for the whole spreadsheet. With the LQ-2550, there are two main ways of sending commands to control the printing of a spreadsheet. The first method is to choose condensed from the SelecType control panel.

For the second method, look in the manual for your spreadsheet to find out how to send printer commands. Then look in the Command Summary in Chapter 8 to find the proper codes to send.

For example, your spreadsheet might use a "setup string" to send printer commands. To prepare a setup string for 12 cpi condensed, you would look up the proper command in the Command Summary. The command for 12 cpi is ESC M, and the command for condensed is SI. Because most spreadsheets use the decimal equivalent for the commands, (also given in the Command Summary), a setup string for 12 cpi condensed might look like this:

/027/077/015

The number 027 is for the escape code, 077 is for M, and 015 is for SI (condensed).

Using graphics software

The LQ-2550 is capable of producing finely detailed graphic images. Although the section on graphics later in this chapter gives specific information on the graphics commands, the easiest way to take advantage of the LQ-2550's capabilities is with one of the many graphics programs available.

When buying graphics software, always make sure the program has an option to print on an LQ printer. Any program with an option for an LQ printer should give excellent results, using different dot densities to produce a realistic scale of grays.

If you plan to use color, be sure that the program supports color for an LQ printer.

Most graphics programs have a printer selection procedure, in which case you should check the lists on page 4-2 to find the proper selection.

Computer-Printer Communication

Your computer communicates with your printer using a standardized set of numbered codes called ASCII codes (American Standard Code for Information Interchange). When you press the letter A on the keyboard, it is translated into the ASCII code for A, transmitted to a peripheral device such as your computer screen or your printer, and then converted back into the letter A.

There are ASCII codes for all the letters in the alphabet, both uppercase and lowercase letters, and for the numbers 0 through 9. The ASCII set of codes also includes most punctuation marks and some codes that control printer functions.

In the Command Summary in Chapter 8, each code is expressed three different ways: as an ASCII character, as a decimal number, and as a hexadecimal (base 16) number. For example, the uppercase letter A is represented as the ASCII character A, the decimal number 65, and the hexadecimal number 41. The numbering system you use depends on your software and your preferences.

All letters, numbers, and punctuation marks are assigned decimal numbers from 32 through 255. ASCII codes with decimal values of less than 32 are called control codes, because they control the operation of your printer and other peripherals. These ASCII characters do not usually have corresponding keys on the keyboard and cannot be printed as characters by your printer.

Escape sequences

Although there are more than 30 control codes available to control the operation of your printer, many more codes are required to run today's sophisticated printers. Therefore, ASCII codes are grouped in sequences to represent certain functions. These code sequences use the ASCII codes with decimal values of 32 through 255, normally reserved for characters and punctuation, to control printer functions. This is done by first sending a standard code to tell the printer that the codes that follow are to be used as control codes, not as characters or punctuation.

The standard code that is sent at the beginning of one of these code sequences is the Escape code, decimal value 27. Any sequence of codes starting with the Escape code is called an Escape sequence. You will probably see Escape written in different ways-such as ESC, Esc, and ESCape—in various manuals. In this manual it is in the form of ESC when used within a command.

Printer commands

In order for the printer to recognize the instructions it receives, ASCII codes must be sent in a specific format, called a command. An Escape sequence is a command, as is any ASCII code or sequence of codes that instructs the printer to carry out a particular function. Your software continually sends commands to your printer and your computer screen. These commands instruct the printer to perform such actions as print in a particular typeface, feed the paper a certain amount after printing each line, and start printing on a particular spot on the page.

Some software programs let you send these commands yourself. This is a powerful feature because it allows you to enhance your text in ways that may not normally be available through the software. For example, many word processing programs do not offer italics. By inserting a command in your document, however, you can use italics anywhere you like. The commands that your printer recognizes are listed in the Command Summary in Chapter 8 and on the Quick Reference card at the back of this manual.

Using the Command Summary

The commands listed in the Command Summary in Chapter 8 consist of various combinations of ASCII codes. You can use either the ASCII characters or their decimal or hexadecimal equivalents. For example, the command to turn on subscript is ESC **S1** in ASCII characters. The decimal format for this command is 27 83 01, and the hexadecimal format is **1B 53 01.**

In the Command Summary, commands are grouped by the printer functions they control, such as character pitch, print enhancement, and graphics. You can also look up commands in the list of software commands in numerical order at the beginning of the Command Summary. This list gives you page number references for the commands.

Some commands include a variable, such as the letter n. For example, the command for selecting or cancelling double-high mode is ESC w n. When $n = 1$, double-high mode is turned on, and when $n = 0$, it is turned off. In the Command Summary, variables are printed in italics to distinguish them from ASCII characters.

Sending printer commands from within your software program

How you format commands depends on the software program you are using. Some software programs accept only the decimal format, while others require certain punctuation. Some programs don't let you insert printer commands at all.

If your software does allow you to send commands to the printer, use the Command Summary to find the command you want to send. Your software manual should explain exactly what format and punctuation are required.

Enhancing Your Printing

You can obtain a wide variety of printing effects with the LQ-2550, from changing the number of characters printed per inch to using special effects or adding color to selected words and phrases. This section gives you a sampling of the features you may want to select with your software.

For software control of these features, see the instructions for your applications program or look up specific commands in the Command Summary in Chapter 8. The command for color is on page 8-27.

Character size

To add greater variety to your documents, the LQ-2550 has three character sizes and proportional spacing. All four can be selected with a software command, or by SelecType or panel setting (see Chapter 3).

For each of the built-in fonts, you can choose a character size of 10, 12, or 15 characters per inch (cpi), or proportional spacing. The printout below compares the three sizes:

```
This is 10 pitch printing.
This is 12 pitch printing.
This is 15 pitch printing.
```

As shown above, 15 cpi characters are only about two-thirds the height of 10 and 12 cpi characters. This makes 15 cpi particularly useful when you want to separate certain material from the main text.

In 10 cpi, as in 12 and 15 cpi, each character is given an equal amount of space. The spacing for proportional characters, however, varies from character to character. Therefore, a narrow letter like i receives less space than a wide letter like W. The width of each proportional character is given in Appendix B.

The following printout compares 10 cpi with proportional spacing:

```
This is 10 pitch printing.
This is proportional spacing.
```

Proportional spacing is not available in the draft mode.

Special effects and emphasis

In addition to the three basic sizes and proportional spacing, the LQ-2550 offers three other modes that can change the size of your printing. These modes are double-wide, double-high, and condensed.

Double-wide and double-high

The double-wide mode doubles the width of any size character, while the double-high mode doubles the height of any size character. These modes are useful for emphasizing headings in reports and making displays, but they are usually not suitable for large **amounts** of text. These modes can also be combined to obtain even more impressive printing results.

T h i s i s d o u b l e - w i d e .
This is double-high,
Double-wide double-high

Condensed

Both 10 and **12** cpi printing can be reduced to about 60% of their normal width using the condensed mode. This mode is particularly useful for printing wide spreadsheets because condensed **12** cpi allows you to print up to 272 characters on an 136inch line.

Condensed can be selected with a software command, with SelecType, or with a panel setting (see Chapter 3). Even if you turn condensed on with SelecType or a panel setting, you can still turn it off with a software command.

Condensed 10 cpi gives you more characters on a line.
Condensed 12 cpi gives you even sore!

Widening or narrowing the characters also widens or narrows the spaces between words and letters. Because word processors usually create a left margin by printing spaces, you may need to adjust the margins and the number of characters on a line to keep the margins correct if you change character widths.

Emphasized and double-strike printing

Emphasized and double-strike modes give your printing added emphasis. In emphasized mode, the LQ prints each character twice as the print

head moves across the paper, with the second dot printed slightly to the right of the first. This process produces darker, more fully formed characters.

In double-strike mode, the print head goes over each line twice, making the text bolder. For even greater boldness, emphasized and double-strike can be combined. The following samples show the different effects you can achieve.

This is ROMAN printing.
This is ROMAN emphasized.
This is ROMAN double-strike.
This is ROMAN with both.

Italic printing

You can select the italic mode by using the ESC 4 software command. A sample of italic printing is shown below.

This is ROMAN printing.
This is ROMAN italics.

Underlining

The underline mode automatically underlines any piece of text. It underlines spaces, subscripts, and superscripts without a break.

This is continuous underlining.

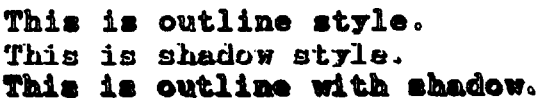
Superscripts and Subscripts

Superscripts and subscripts can be used for printing footnote numbers and mathematical formulas. The example below shows underlining, superscripts, and subscripts combined in a mathematical formula.

$$\text{average} = \frac{(a_1 + a_2 + \ldots\ldots\ldots + a_n)}{n}$$

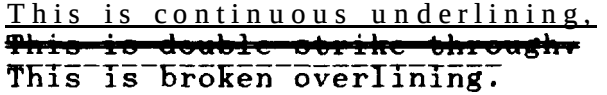
Outline and shadow

The outline and shadow features are useful for adding variation and emphasis to text that you wish to stand out, such as headings. The following 'samples show the shadow and outline features individually, and a combination of outline with shadow.



Overscore, strike-through, and underlining

The overscore, strike-through, and underlining modes are useful for highlighting text. This feature can be used to score spaces, subscripts, and superscripts without a break. You can choose from a variety of line styles: single, double, broken, or continuous. See the ESC (- command in Chapter 8 for more information.



Selecting typestyles with Master Select

Your printer has a special ESCape code called Master Select that allows you to choose combinations of these nine modes: 10 cpi, 12 cpi, proportional, condensed, emphasized, double-strike, double-wide, italics, and underline. For more information on sending ESCape codes to your printer, see the section on computer-printer communication earlier in this chapter.

The format of the Master Select code is shown below:

ASCII:	ESC	!	*n*
Decimal:	27	33	n
Hexadecimal:	1B	21	*n*

The variable *n* is a number that identifies the mode or combination of modes. To find the value of n, use the following table to add up either the decimal or hexadecimal numbers for the features you want.

Feature	Dec.	Hex.
10 cpi	0	00
12 cpi	1	01
proportional	2	02
condensed	4	04
emphasized	8	08
double-strike	16	10
double-wide	32	20
italics	64	40
underline	128	80

For example, to print a title, you may want to use double-wide 12 cpi characters and print them in double-strike mode. You add three numbers together to calculate the value of *n*:

```
12 cpi              1
Double-strike      16
Double-wide        32
                n = 49
```

After calculating the value of *n*, you use the Master Select command to send the value to the printer.

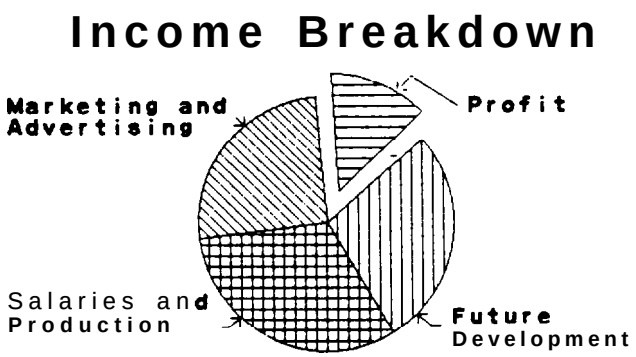
```
ASCII:        ESC   !    1
Decimal:      27    33   49
Hexadecimal:  1B    21   31
```

The print quality and font must be set separately, either using SelecType or the ESC x and ESC k commands. There are two more things to consider when using the Master Select command:

- Master Select cancels any of the listed features that you do not try to set. For example, if you have already set a character size other than 10 cpi and you use Master Select to set emphasized double-strike, the character width is reset to 10 cpi.
- Proportional overrides 10, 12, and 15 cpi.

Graphics

The dot graphics mode allows your printer to produce pictures, graphs, charts, or almost any other graphics. Because many commercial software programs use graphics, you may be able to print pictures or graphs like the following one simply by giving your software a few instructions.



The quickest and easiest way to print graphics is to use a commercial graphics program. With such programs you usually create an image on your monitor and then use a command to send the image to the printer.

If you use commercial software that produces graphics, all you need to know about dot graphics is how to use the software. If, on the other hand, you wish to do your own programming or merely wish to understand how the printer prints graphics, read on.

The print head

To understand dot graphics you need to know a little about how your printer's print head works. The print head has 24 pins. As the print head moves across the page, electrical impulses cause the pins to fire. Each time a pin fires, it strikes the inked ribbon and presses it against the paper to produce a small dot. As the head moves across the paper, the pins fire time after time in different patterns to produce letters, numbers, or symbols.

Because the dots overlap each other both horizontally and vertically in the Letter Quality mode, it is difficult to see individual dots. Instead, the letters and symbols seem to be made of unbroken lines.

In order for the dots to overlap vertically, the pins are in more than one column, but the intelligence of the printer handles the timing of pin firings so that the effect is of 24 pins arranged in a single vertical column.

Dot patterns

Your printer's print head is able to print graphics as well as text because graphic images are formed on the printer about the same way that pictures in newspapers and magazines are printed. If you look closely at a newspaper photograph, you can see that it is made up of many small dots. Your printer also forms its images with patterns of dots, as many as 360 dot positions per inch horizontally and 360 dots vertically. The images printed by the printer can, therefore, be as finely detailed as the ones at the beginning of this section.

Color graphics

With the color ribbon and appropriate software, you can print in a wide variety of colors. Even if your software doesn't support color, printer command ESC r lets you select from seven basic colors, including black. In addition, you can combine some of the basic colors for a greater variety.

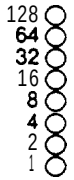
Twenty-four-pin graphics

The graphics mode that takes full advantage of the printer's print head is 24-pin graphics. This mode has five densities, but for simplicity this explanation begins with triple-density.

Triple-density prints up to 180 dots per inch horizontally. As the print head moves across the paper, it must receive instructions every 1/180th of an inch about which of its 24 pins to fire. At each position it can fire any number of pins from none to 24. This means that the printer must receive 24 bits of information for each column it prints. Since the printer uses B-bit bytes of information in its communication with the computer, it needs three bytes of information for each position.

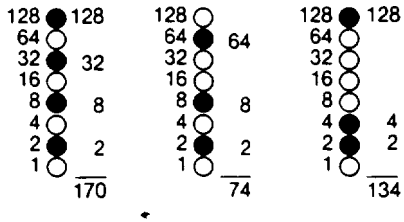
Pin labels

To tell the printer which pins to fire in each column, you first divide each of the vertical columns into three sections of eight pins each and consider each section separately. Since there are 256 possible combinations of the eight pins in each section, you need a numbering system that allows you to use a single number to specify which of the 256 possible patterns you want. This numbering system is shown below:



To fire any one pin, you send its number. To fire more than one pin at the same time, you add up the numbers of the pins and send the sum to the printer. Using these labels for the pins, you fire the top pin by sending 128. To fire the bottom pin, you send **1.** If you want to fire only the top and bottom pins, you simply add 128 and 1, and send 129.

By adding the appropriate label numbers together, you can fire any combination of pins. The following three examples show you how to calculate the number that will fire a particular pattern of pins.



With this numbering system, every combination of the eight pins adds up to a decimal number between 0 and **255,** and no numbers are duplicated.

Since there are **24** pins in each column, you must make a calculation for each of the three sections in each column. As you can see, this method of planning and printing dot graphics requires considerable calculation. Because triple-density uses **180** columns per inch, printing a single line of triple-density graphics only one inch long requires **540** numbers. Fortunately, commercial software can do the calculations for you.

Before you can put these numbers in a graphics program, you need to know the format of the graphics command.

The graphics command

The graphics mode command is quite different from the other commands used by the printer. For most of the other printer modes, such as emphasized and double-wide, one ESCape code turns the mode on and another turns it off. For graphics, the command is more complicated because the code that turns on a graphics mode also specifies how many columns it will use. After the printer receives this code, it interprets the next numbers as pin patterns and prints them on the paper.

Your printer has one command that allows you to use any of the **11** graphics options. The format of the command is:

ESC * *m n1 n2* data

In this command, *m* selects the graphics option and *n1* and *n2* specify the number of columns to reserve for graphics. The available graphics options are listed in the following table.

Option	Pins	*m*	Horiz. density dots/in.
Single-density	8	0	60
Double-density	8	1	120
High-speed double-density*	8	2	120
Quadruple-density*	8	3	240
CRT I	8	4	80
CRT II	8	6	90
Single-density	24	32	60
Double-density	24	33	120
CRT III	24	38	90
Triple-density	24	39	180
Hex-density*	24	40	360

* Adjacent dots cannot be printed in this mode.

Column reservation numbers

The graphics command requires more than one number to specify how many columns to reserve, since one line may use thousands of columns but the printer does not use numbers larger than 255 in decimal. Therefore, the graphics mode command uses two numbers for reserving columns.

To figure *n1* and *n2,* divide the total number of columns by 256. The quotient is *n2;* the remainder is *n1.* Since the command is set up for two numbers, you must supply two even if you need only one. When you need fewer than 256 columns, just make *n1* the number of columns you are reserving and make *n2* a zero.

For example, if you wish to send 1632 columns of graphics data, *n1* should be 96 (the remainder) and *n2* should be 6 (the quotient) because 1632 = (6 x 256) + 96.

The printer interprets the number of bytes determined by *n1* and *n2* as graphics data, no matter what codes they are. This means that you must be sure to supply enough bytes of graphics data or the printer will stop and wait for more data and will seem to be locked. If, however, you supply too much graphics data, the printer will interpret and print the excess as regular text.

A simple graphics program

This first program is just a simple example to show you how the graphics command, column reservation numbers, and data can be used in a BASIC program.

Type and run the following program. Be especially careful to include both semicolons. The program produces the printout you see below it.

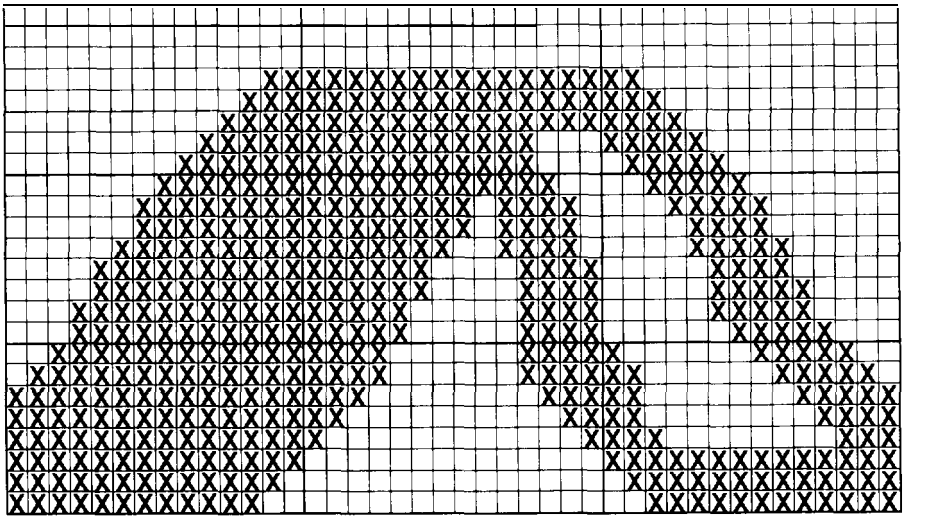
```
10 WIDTH "LPT1:",255
20 LPRINT CHR$(27)"*"CHR$(32)CHR$(40)CHR$(0);
30 FOR X=1 TO 120
40 LPRINT CHR$(170);
50 NEXT X
```

Line 20 selects single-density 24-pin graphics mode (mode 32) and also reserves 40 columns for graphics. Since the 24-pin graphics mode requires three bytes of data for each column, line 30 begins a loop to supply 120 bytes of data. Line 40 contains the number 170, which produces the first pin pattern shown in the section on pin labels, and line 50 finishes the loop.

Using hand-calculated data to print graphics

With what you know now, you can use the simplest application of graphics-using hand-calculated data to print graphic images. While this method is tedious, it helps you understand dot graphics. Also, it is useful for small graphic elements that are used many times.

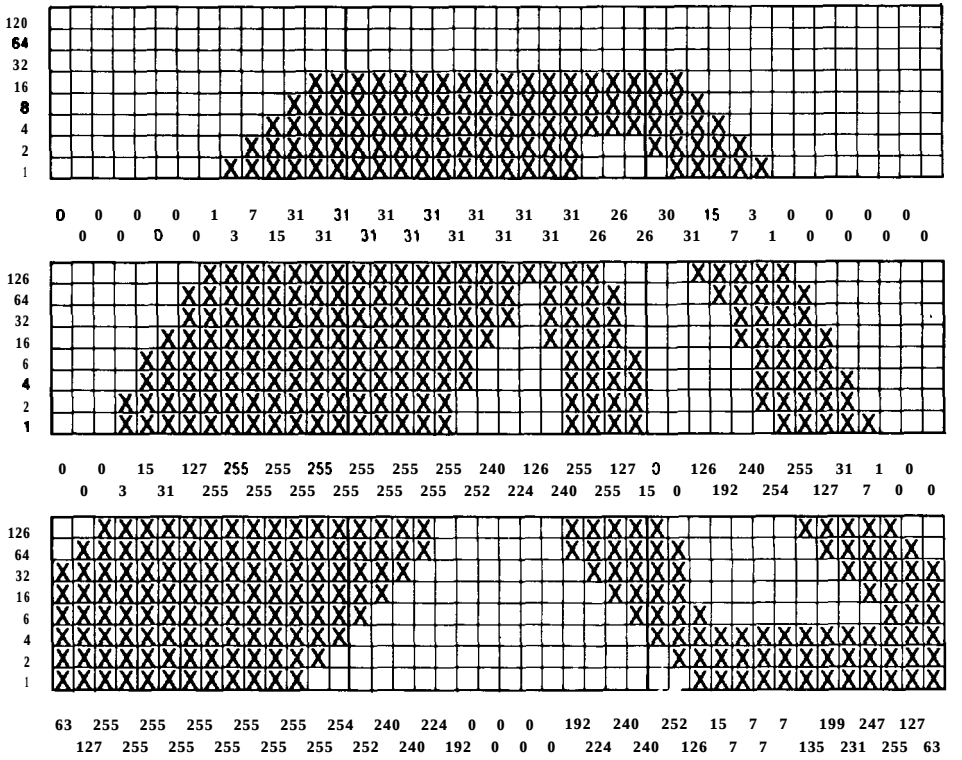
The following illustration shows how you can use a grid to plan where you want dots to be printed. This grid is for a single line of graphics 42 columns long. Since each line of 24-pin graphics is approximately 1/8th of an inch high and since triple-density graphics prints 180 dots per inch horizontally, a design planned on this grid will be about 1/8th of an inch high and less than 1/4th of an inch wide.



The actual pattern **that** the printer prints on **the** paper is made up of dots that overlap each other both vertically and horizontally. The reason the planning grid uses **an** x for **each** dot is that using an accurate representation of **the** dots makes calculating the data numbers difficult because they cover each other. Therefore, remember that **each x** represents the center of a dot, and the dots actually overlap.

Write the assigned values of the pins next to your design and then total the values for **each** column of dots. These totals are the values that will be sent to the printer as graphics data.

The following figure is the same grid divided into three sections to make the data calculation easier. At the bottom of each section of each column is the total of the pin numbers for that section. This gives you a total of 126 data numbers necessary to print this small figure.



Following is the BASIC program that prints the design shown on the previous pages. Notice that the data numbers in lines 80-140 are the same numbers that you see in the last illustration. Also note that the WIDTH statement in line 10 is for IBM PC BASIC; the format may be different for your system.

```
10 WIDTH "LPT1:",255
20 LPRINT CHR$(27)"*"CHR$(39)CHR$(42)CHR$(0);
30 FOR X=1 TO 126
40READN
50 LPRINT CHR$(N);
60 NEXT X
70 LPRINT
80 DATA 0,0,63,0,0,127,0,0,255,0,3,255,0,15,255,0,31,255
90 DATA 0,127,255,0,255,255,1,255,255,3,255,255,7,255,255,15,
   255,255
100 DATA 31,255,254,31,255,252,31,255,248,31,255,240,31,255,
   224,31,255,192
110 DATA 31,255,0,31,252,0,31,240,0,31,224,0,31,128,0,31,240,0
120 DATA 31,255,192,28,255,224,28,127,240,28,15,248,30,0,252,
   31,0,126
130 DATA 15,128,15,7,192,7,3,240,7,1,254,7,0,255,7,0,127,135
140 DATA 0,31,199,0,7,231,0,1,247,0,0,255,0,0,127,0,0,63
```

In this program, line 20 assigns the graphics option (24-pin triple-density) with code 39. Code 42 sets the number of pin columns at 42. Lines 80-140 contain 126 bytes of data (42 pin columns x 3 bytes) for each pin column. Lines 30-60 print the following design.

Notice that the dots overlap quite a bit. This design was printed using the triple-density 24-pin graphics option because the density is the same (180 dots to the inch) in both directions.

Adding the following lines to the preceding program causes the pattern to print 10 times in a row as shown below.

```
15 FOR C=1 TO 10: RESTORE
65 NEXT C
```

Individual graphics option commands

There are four individual graphics option commands that are very much the same as the ESC * command, but each one works for only one graphics option. All these commands are for B-pin graphics options. Note that the commands contain one less variable than the ESC * command because they don't need to select a graphics option.

The commands are shown below:

Command	Function	ESC * Format
ESC K	Single-density	ESC * 0
ESC L	Double-density	ESC * 1
ESC Y	Double-density, high-speed	ESC * 2
ESC Z	Quadruple-density	ESC * 3

Because of a difference in line spacing increments, the shape of graphics figures produced on the LQ-2550 with an B-pin option is different from the output from the same program on a 9-pin printer.

The reassigning command

The LQ-2550 has a command that allows you to change the graphics option assigned to any of the four individual graphics option commands.

The command looks like this:

ESC ? *s m*

The letter s represents the command that you wish to change the assignment for (K, L, Y, or Z) and *m* is the number of the graphics option that you want to assign to it. For example, to change the ESC K command to use the CRT I graphics option, the command in BASIC is:

```
LPRINT CHR$(27);"?";"K";CHR$(4)
```

This is a quick way to change the aspect ratio of the design that you are printing. Changing the graphics option will change the width without changing the height. You should, however, make this change with caution.

If you change one of the 8-pin graphics options to a 24-pin graphics option without changing the program that supplies the graphics data, you will print garbage (if the program prints at all). Remember, the 24-pin graphics options require three times as much graphics data as the 8-pin graphics options.

User-Defined Characters

With this printer, it is possible to define and print characters of your own design. You can design an entirely new alphabet or typeface, create characters for special applications such as mathematical or scientific symbols, or create graphic patterns with user-defined characters to serve as building blocks for larger designs.

Below you can see samples of typefaces created with the user-defined character function.

You can make the task of defining characters easier by using a commercial software program that either assists you in creating characters or simply supplies you with sets of characters already created. Also, some popular commercial software programs take advantage of the printer's user-defined character function to enhance printouts. (These characters are called download characters in some programs.)

Standard characters are stored in the printer's Read Only Memory (ROM), and user-defined characters are stored in the printer's Random Access Memory (RAM).

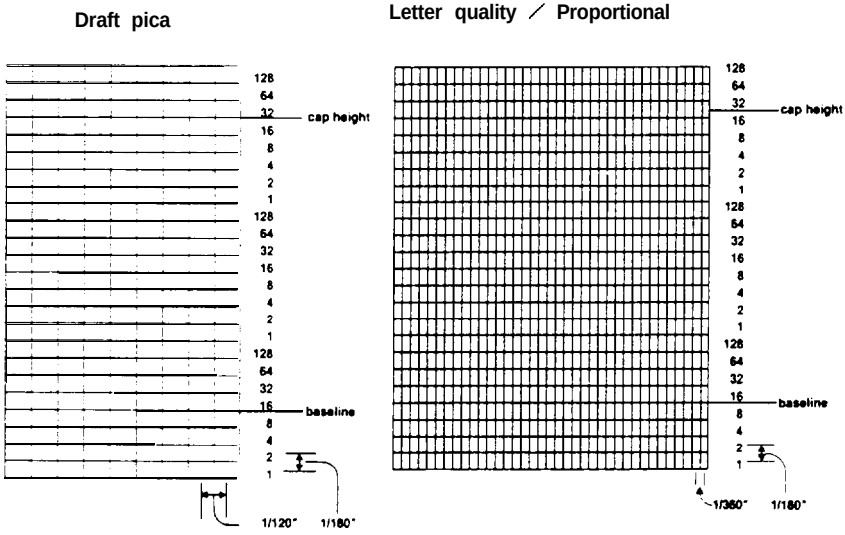
Designing your characters

User-defined characters are like dot graphics because you send the printer precise instructions on where you want each dot printed. In fact, planning a user-defined character is like planning a small dot graphics pattern.

Design grids

To design a character you use a grid that is 24 dots high-one dot for each pin on your printer's print head. The width of the character matrix depends on the character set you are using. For draft characters, the grid is nine dots wide. For Letter Quality it is 29 dots wide, and for proportional characters it is 37 dots wide, with the dots for both Letter Quality and proportional spaced more closely together than those for draft.

The illustrations below show the two design grids. The line at the side labelled cap height indicates the top of a standard capital letter, and the line labelled baseline indicates the baseline for all letters except those with descenders (the bottom parts of letters like j and y). The bottom row is usually left blank because it is used for underlining.



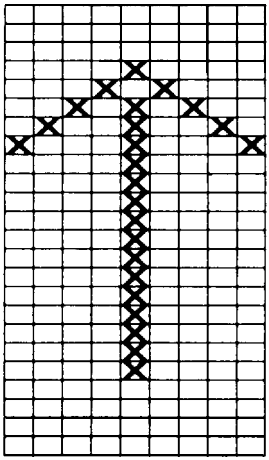
The second grid can be used for either Letter Quality or proportional characters. For Letter Quality you do not use all the columns.

There is one restriction in designing characters. Dots in the same row do not print in adjacent columns. That is, there must be an empty dot position to the left and to the right of each dot that prints. This is true in draft, Letter Quality, and proportional mode.

Defining your characters

The first step in defining characters is to place the dots on a grid just as you want them to print. The examples here, like the ones in the graphics section, use an **x** to represent each dot.

In the following illustration, you see a draft grid with a simple user-defined character planned on it.



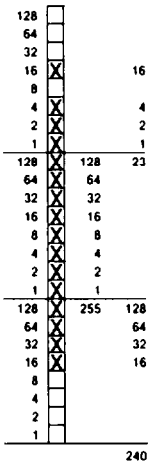
Now you translate the dot pattern you've created on paper to a numeric format so you can send the information to your printer. Every dot has an assigned value. Each vertical column (which has a maximum of 24 dots) is first divided into three groups of eight dots. Each group of eight dots is represented by one byte. Since one byte consists of eight bits, one bit represents one dot.

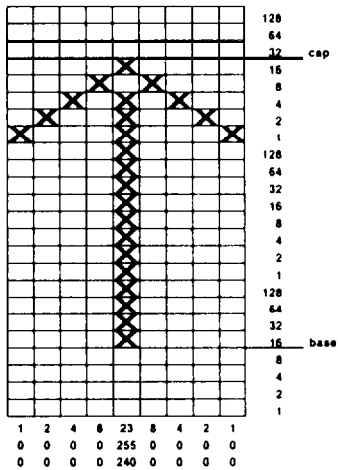
Data numbers

The bits within each byte have values of 1, 2, 4, 8, 16, 32, 64, and 128. In the vertical column of dots, the bits are arranged so that the most significant bit (which has a value of 128) is at the top and the least significant bit (which has a value of 1) is at the bottom.

The next illustration shows you how to use this method to calculate the data numbers for the example character. On the left side of the figure, the data numbers are calculated for the middle column. The value of each byte is calculated by adding the values of the rows where dots appear. The right side of the figure shows the whole character with the three data numbers for each column indicated at the bottom.

This manual uses decimal numbers because the example programs in this manual are written in BASIC and everyone is familiar with decimals. The data you send to your printer, however, can be in any form (binary, decimal, hexadecimal) that you can use with your programming language.





Now you've seen how to design a character by placing dots on a grid and translating the dots to decimal equivalents. The last step in defining a character is to send this information to the printer.

Sending information to your printer

The printer loads characters in the print style (Letter Quality, draft, or proportional) that the printer is currently using. It also records whether italic, superscript, or subscript is turned on. This means that if you want to print a character in the italic mode, for example, you must have the italic mode turned on when you define the character.

The command your printer uses to define characters is one of the most complex in its repertoire. The format of the command is this:

ESC & 0 *n1 n2 d0 d1 d2* data

The ESC & is simple enough. The 0 (which is ASCII code 0, not the numeral zero in quotation marks) allows for future enhancements. At this time, it is always ASCII 0.

With your printer, you can define many characters with a single command. The values *n1* and *n2* are the ASCII codes for the first and last characters you are defining. If you are defining only one character, *n1* and *n2* are the same. You can use any codes between 0 and 127 decimal for *n1* and *n2,* but it is best not to define decimal 32, which is the code for a space. Also, you can use letters in quotation marks instead of ASCII numbers for *n1* and *n2*.

An example will show you how to specify *n1* and *n2*. If, for instance, you wanted to redefine the characters A through Z, *n1* would be A (or ASCII code 65) and *n2* would be Z (or ASCII code 90). So the command ESC & 0 AZ (followed by the appropriate data) would replace the entire alphabet of capital letters.

Following the specification of the range of characters to be defined in this command are three data bytes (*d0-d2*) that specify the width of the character and the space around it. The left space (in dot columns) is specified by *d0,* and the right space is specified by *d2*. The second byte (*d1*) specifies the number of columns of dots that are printed to make up

the character. By varying the width of the character itself and the spaces around it, you can create proportional-width characters **that** print at draft speed.

The table below **shows** the maximum values for these bytes.

Mode	*d1* (maximum)	*d0 + d1 + d2* (maximum)
Draft	9	12
Letter Quality (10 pitch)	29	36
Letter Quality (12 pitch)	23	30
Proportional	37	42

The last part of the character definition is the actual data that defines the dot patterns for each character. Since it takes three bytes to specify the dots in **one** vertical column of dots, your printer expects *d1 x 3* bytes of data to follow *d2*.

An example character definition program should make this clear:

```
10 LPRINT CHR$(27)"xØ"
20 LPRINT CHR$(27)"&"CHR$(Ø);
3Ø LPRINT "@@";
40 LPRINT CHR$(1)CHR$(9)CHR$(1);
50 FOR I=1 TO 27
60 READ A: LPRINT CHR$(A);
70 NEXT I
80 LPRINT "@@@@@"
90 LPRINT CHR$(27)"%"CHR$(1);
100 LPRINT "@@@@@"
110 LPRINT CHR$(27)"%"CHR$(Ø);
120 LPRINT "@@@@@"
13Ø END
140 DATA 1,Ø,Ø,2,Ø,Ø,4,Ø,Ø
150 DATA 8,Ø,Ø,23,255,24Ø,8,Ø,Ø
16Ø DATA 4,Ø,Ø,2,Ø,Ø,1,Ø,Ø
```

In line 10, **the** ESC x0 command selects draft style printing.

The actual character definition starts in line 20. The two at signs (@) in line 30 represent *n1* and *n2*, the range of characters being defined (in this case, a range of one). Line 40 contains *d0*, *d1*, and d2.

The information about the actual character design (which is contained in the data statements at the end of the program) is sent to the printer in the loop between lines 50 and 70.

Note: When defining Letter Quality or proportional characters in BASIC, put a WIDTH statement in your program to prevent carriage return and line feed codes from interfering with your definitions.

Printing user-defined characters

The example program above defines an arrow and places it in the RAM location for ASCII code 64 (replacing the @ sign). When you run the program, it prints a three-line sample of your work. The first and third lines (printed by lines 80 and 120 of the program) print the normal @ sign: the second line (line 100) prints the arrow that you defined.

Run the program to see the printout below:

@@@@@
↑↑↑↑↑
@@@@@

As you can see, both sets of characters (the original ROM characters that the printer normally uses and the user-defined character set) remain in the printer available for your use. The command to switch between the two sets is used in line 90 and 110:

ESC % n

If *n* is 0, the normal ROM character set is selected (this is the default). If n is 1, the user-defined character set is selected. If you select the user-defined character set before you have defined any characters, the command is ignored and the ROM characters remain in use.

You may switch between character sets at any time-even in the middle of a line. To try it, place semicolons at the end of lines 80 and 100 in the program above.

Copying ROM characters to RAM

After running the program above, if you select the user-defined character set and try to print other characters, the only one that will print is the arrow. Since no other characters are in the printer's user-defined RAM area, nothing else prints. Other characters don't even print as spaces; it's as if they were not sent at all.

In many cases, you may want to redefine only a few of the characters to suit your needs; the rest of the alphabet will work fine as it is. As you have seen, it is possible to switch back and forth between the normal character set and the user-defined character set. It is, however, rather inconvenient.

To make things easier, your printer has a command that allows you to copy all of the standard characters from ROM to the user-defined character set.

The command format is as follows, where the value of *n* represents the font family:

ESC : 0 *n* 0

> Note: This command cancels any user-defined characters you have created. You must send this command to the printer before you define characters.

If you use this command at the beginning of a program, then define your special characters and select the user-defined character set, you can print with the user-defined set as your normal character set. You never need to switch back and forth between sets.

Letter Quality characters

If you select Letter Quality printing with the ESC xl command, you can design user-defined characters using up to 29 columns of the Letter Quality/Proportional grid. The dot columns are spaced closer together

horizontally than draft style dot columns-the horizontal dot spacing is 1/360th of an inch as opposed to 1/120th of an inch for draft characters.

Proportional mode characters

Selecting the proportional character mode yields user-defined characters of the highest resolution. Characters can be designed using all 37 columns of the Letter Quality/Proportional grid.

Remember that in both Letter Quality and proportional modes, as in draft mode, you cannot place dots in adjacent columns. There must be an empty dot position to the left and right of each dot that prints.

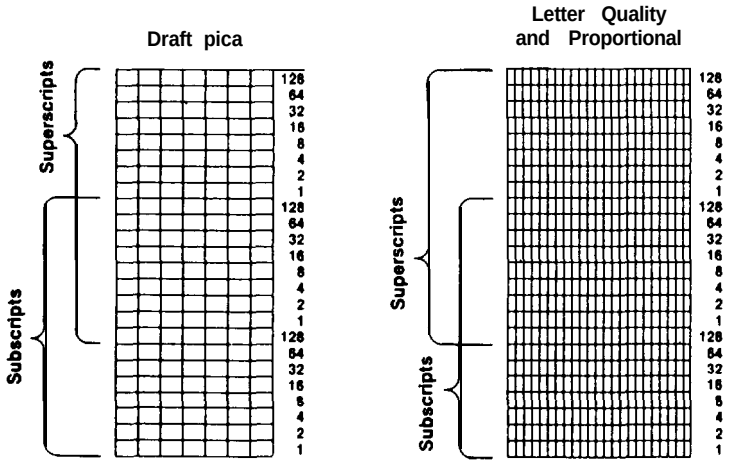
Superscripts and subscripts

You can also create superscript and subscript user-defined characters. Just as Letter Quality characters are defined when the Letter Quality mode is selected, superscript and subscript characters are created when either superscript or subscript is selected.

These characters **can** be used as either superscripts or subscripts. The characters are exactly the same; it is only their placement **that** differs. The difference between these characters and regular characters is **that** superscript and subscript characters are smaller. They are a maximum of 16 dots high and their width in dot columns is shown in **the** following table.

Mode	*d1* (maximum)	*d0* + *d1* + *d2* (maximum)
Draft	7	12
Letter Quality	23	36
Proportional	23	42

Since these characters are smaller, when you define them you need only two bytes of data for each vertical row of dots. Design grids for these characters are shown in the following figure.



Mixing print styles

Each of the three user-defined character modes (draft, Letter Quality, and proportional) can be used in combination with most of your printer's various print styles. For instance, you can use emphasized with your user-defined characters.

Mixing the three types of user-defined character sets is not permitted. If, for example, you select draft mode and define some characters, then select proportional and define some more, the first character definitions are destroyed. Only one type of character definition may be stored in RAM at any time.

If you define characters in one mode, then switch to another mode and select the user-defined character set, the command is ignored and nothing is printed. The user-defined character definitions, however, remain unaffected. If you switch back to the mode in which they were defined, you can then select and print them.

Keep in mind that user-defined characters are stored in RAM, which is not permanent. Whenever the printer power is turned off or the printer is initialized with the INIT signal, the user-defined characters are lost. (Some computers do this each time BASIC is loaded.) ESC @, however, does not destroy user-defined characters.

Chapter 5

Maintenance and Transportation

Cleaning the Printer

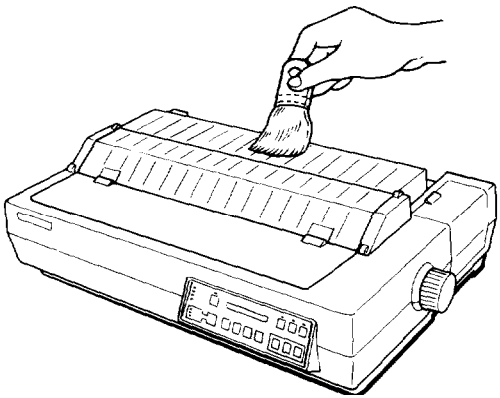
To keep your printer operating at its best, you should clean it thoroughly several times a year.

Follow these steps to clean the printer:

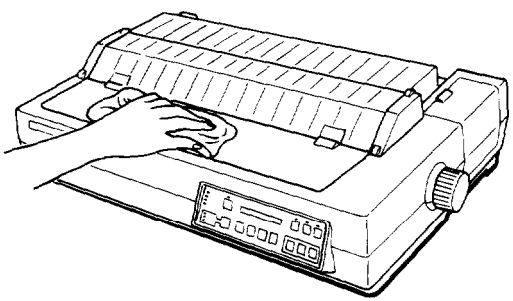
1. Turn off the printer.

2. Remove the paper guide and any installed options.

3. Use a soft brush to carefully clear away all dust and dirt.



4. If the outer case or printer cover is dirty or dusty, clean it with a soft, clean cloth dampened with mild detergent dissolved in water. Keep the printer cover in place to prevent water from getting inside the printer.



WARNING:

- Never use alcohols or thinners to clean the printer; these chemicals can damage the components as well as the case.
- Be careful not to get water on the printer mechanism or electronic components.
- Do not use a hard or abrasive brush.
- Do not spray the inside of the printer with lubricants; unsuitable oils can damage the mechanism. Contact your Epson dealer if you think lubrication is needed.

Replacing the Ribbon

When your printing becomes too faint, you need to replace the ribbon. The following Epson replacement ribbon cartridges are available:

#7762 : Standard (black)
#7763 : Color
#7764 : Film (black)

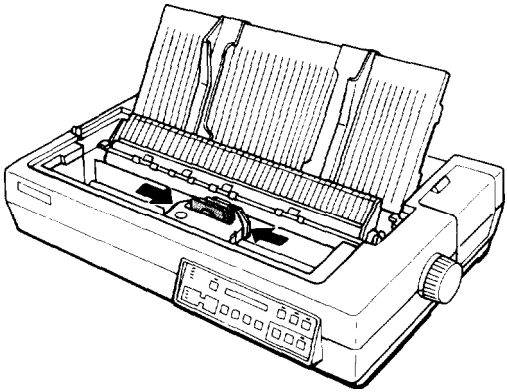
Note: The optional film ribbon prints in red near the end of the ribbon. Replace the film ribbon at this point.

To replace the ribbon follow the procedure below:

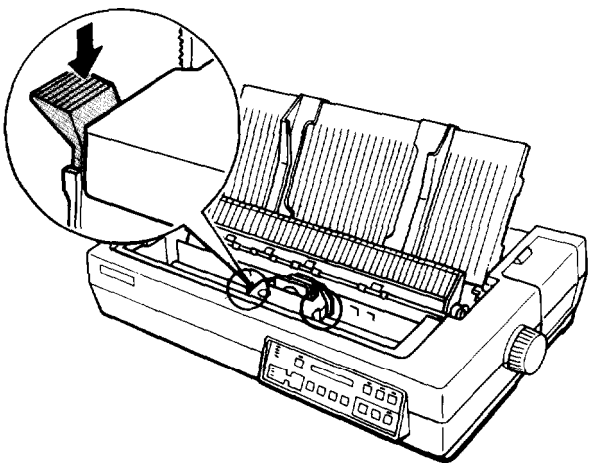
1. Turn off the power to the printer and remove the printer cover and the paper guide cover.

WARNING: If the printer has been used recently, the print head may be hot. Let it cool before attempting to replace the ribbon.

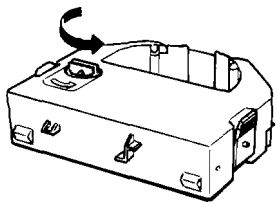
2. Holding the print head, not the ribbon cartridge, move the print head to the middle of the printer.



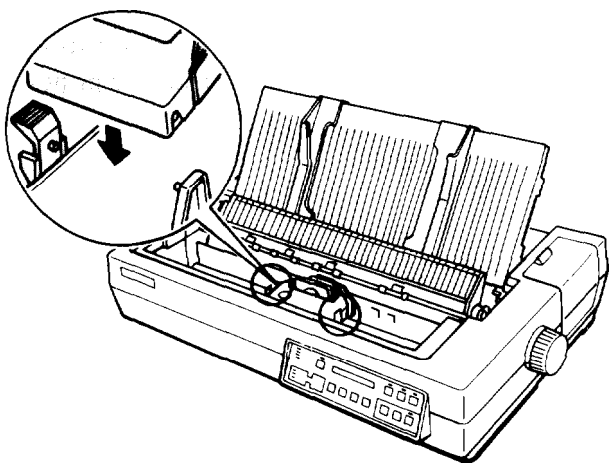
3. To release the ribbon cartridge, gently press the tab at the top of the holder; then lift the cartridge straight up and out of the printer.



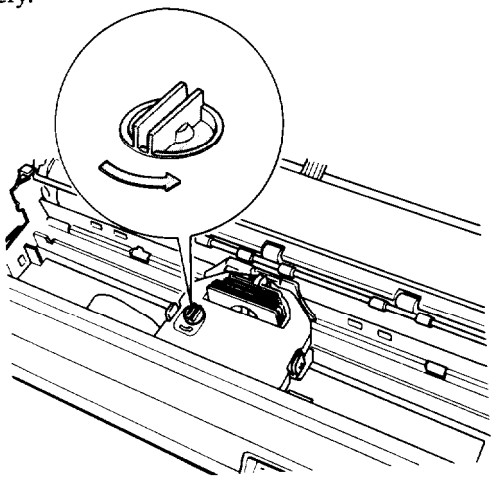
4. Turn the ribbon-tightening knob on the ribbon cartridge in the direction of the arrow.



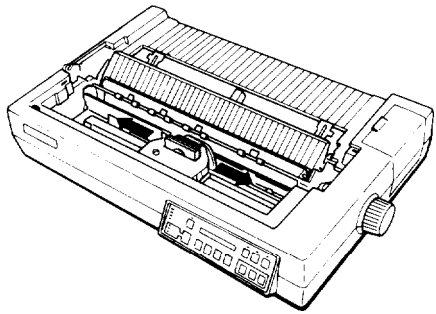
5. Hold the ribbon cartridge while gently squeezing the two ridged plastic tabs together; then lower it until it snaps into place. The side hooks in the printer should fit into the slots on each side of the ribbon cartridge.



6. Turn the ribbon tightening knob again to make sure the ribbon moves freely.



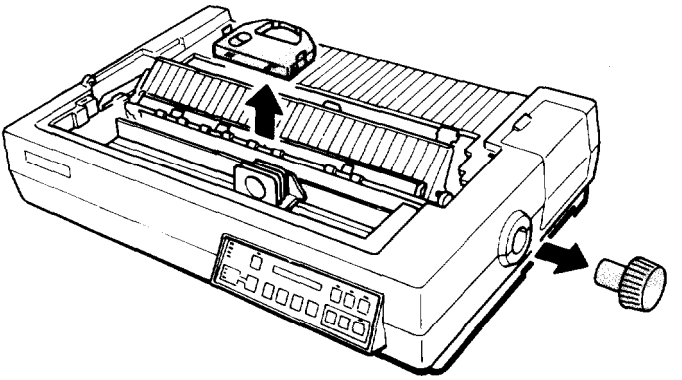
7. Holding the print head, slide the print head from side to side to make sure that it moves smoothly. (Do not try to slide the print head by grasping the ribbon cartridge.)



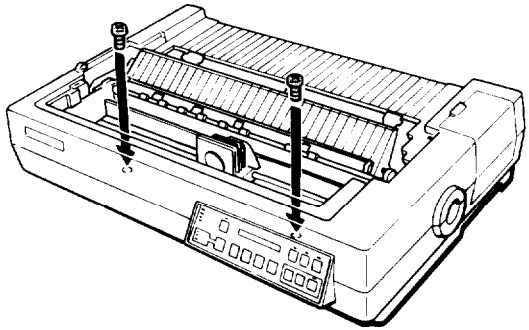
Transporting the Printer

If you need to transport your printer some distance, carefully repack **the** printer using the original box and packing materials, as described below.

1. Turn off the printer.
2. Remove any installed options.
3. Remove the printer cover, paper guide, paper guide cover, and cable cover.
4. Unplug the power cable from the electrical outlet; **then** disconnect the cable between the printer and the computer.
5. Remove the ribbon cartridge and platen knob.

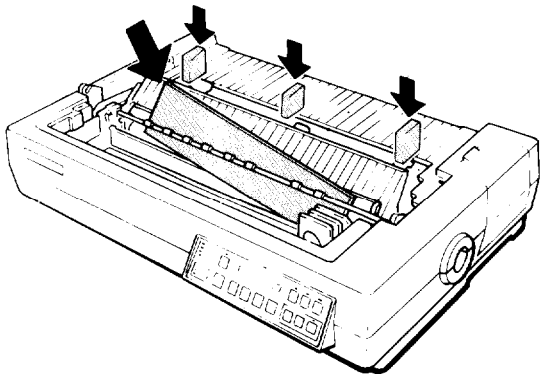


6. Using a cross-head screwdriver, reattach the two red transport screws.

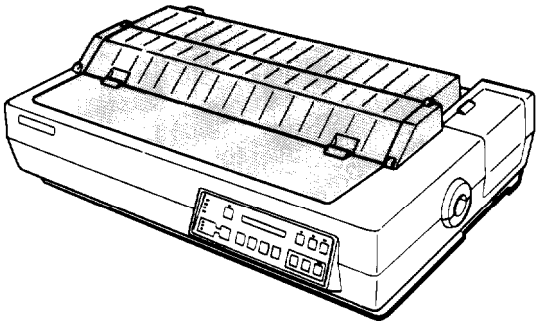


WARNING: Never hold the printer by the font compartment cover. This cover could come off and cause you to drop the printer.

7. Pull the paper bail open **and** insert the print head protector between the paper bail and platen as shown below. Then insert the white foam packing material.



8. Reattach the paper guide cover and printer cover.



Chapter 6

Troubleshooting

Troubleshooting

This chapter discusses problems you may encounter and their likely solutions. At the back of the chapter is a section on the data dump mode. This mode helps more experienced users determine the causes of communication problems between **the** printer and the computer.

Problems and Solutions

This section lists possible problems and their likely solutions.

The printer does not print

- Be sure the printer is turned on and the **POWER** light is on. If the printer is turned on but the **POWER** light is not on, check to see that the printer is fully plugged in and that the electrical outlet is also turned on.
- Be sure the **ON LINE** light is on. If it is not on, press the **ON LINE** button.
- Be sure the printer is connected securely to the computer. Check both ends of the cable between the printer and the computer.
- Be sure the printer is not out of paper. (The **PAPER OUT** light should be off .)
- Be sure that all protective materials are removed from the printer.

If the printer still does not print, disconnect **the** printer from **the** computer and try **the** self test described in Chapter 1. If the self test works properly, **the** printer is working and the problem probably lies in the computer, **the** software, or the cable. If the self test does not work, contact your Epson dealer.

The printer stops printing

- The printer may be out of paper. Check **the** paper supply.
- The paper may be jammed. Remove the jammed paper and reload.
- The ribbon may be jammed. See the section **on** replacing the ribbon in Chapter 5.

- If the display shows HEAD HOT, the print head is overheating. Wait a few minutes; the printer resumes printing automatically when the head cools.
- If the printer stops and the beeper sounds and the display shows ERROR 10, turn the printer off and check for paper jams. Then turn the printer back on and try to print again. If the printer beeps again and does not print, take it to a qualified service person.
- If the printer stops, the beeper sounds, and the display shows ERROR 11, the paper is not straight. Turn the printer off, remove the paper, turn the printer back on, and reload the paper with the **LOAD/EJECT** button.
- If the printer stops, the beeper sounds, and the display shows error 12 the platen knob was used to advance paper. Turn the printer off, remove the paper, turn the printer back on, and reload the paper with the **LOAD/EJECT** button.

The printout is spaced incorrectly

- If all the text is printed on the same line, no line feed command is being sent at the end of each line of text. Change the auto line feed setting in SelecType to on. See Chapter 3 for details.
- If the printer is inserting extra blank lines between lines of text, extra line feed commands are being sent. Change the auto line feed setting in SelecType to off. See Chapter 3 for details.
- If the printer inserts extra blank lines even after setting auto line feed off, disable the **AUTO FEED XT** signal of your interface.

The printout is faint or uneven

- The ribbon may not be properly installed. See Chapter 1.
- The ribbon may be worn out. See Chapter 5.
- The print head may be worn out. This is especially likely if parts of printed characters are missing. Contact your dealer to have the head replaced. Never attempt to replace the head yourself because other parts of the printer should be checked at the same time.

- If printing on envelopes is faint, use **the PLATEN GAP ADJUST** button. See Chapter 3 for details.

The printout is not what you expect

- The wrong international character set may be selected. See Chapter 3.
- The wrong character table (italics or Epson Extended Graphics) may be selected. See Chapter 3 and Appendix B.
- The printer may not be securely connected to the computer. Check both ends of the cable between **the** printer and the computer.
- See that your software's font, size, or page layout settings are correctly set up for your printer.
- The application program may be changing the SelecType settings. Use the program's setup procedure to remove codes that interfere with SelecType, or use the program's printer control codes instead of SelecType. (See your software manual.)

Single sheets do not feed properly

- Be sure that PAPER SELECT is set to FRICTION.
- The paper may be too large or too small. See Appendix A.
- Be sure the paper guide is in the upright position and **the** edge guides are properly adjusted. See Chapter 2.
- Be sure that the paper is not jammed.
- Be sure your software is set correctly. Choose your software's hand-fed or single sheet mode if available. Use a form feed at the end of each page if possible.

Continuous paper does not feed properly

- Be sure that PAPER SELECT is set to TRACTOR.
- See that the holes of the paper fit correctly over the sprockets.

- The paper guide may not be installed properly. See Chapter 2.
- The paper supply may be too far from the printer or not aligned with the tractor. See Chapter 2 for instructions.
- Be sure that the cable cover is properly installed. See Chapter 2.

Cut sheet feeder does not load paper correctly

- Be sure PAPER SELECT is set to CSF.
- The cut sheet feeder may not be installed properly.
- The paper supply may not be loaded properly. Only 150 sheets may be loaded; remove any extra.
- The paper may not be correct for proper operation.
- Remove any paper jam.
- The paper set lever of the cut sheet feeder may not be pushed back.
- The paper length may not be set correctly.

See Chapter 7 for more information on cut sheet feeder operation.

The short tear-off feature does not work properly

- Be sure Auto Tear Off is set to on in SelecType or press the TEAR OFF button.
- Be sure that all the data in the buffer has been printed and that a command has been sent to feed the paper to the top of the next page. You may have to send a form feed.

Color printing is not what you expect

- See that your software is properly installed for color printing on the LQ-2550.
- If your application program allows you to insert control codes, see page 8-27 for the commands for color.
- You can also choose the color with SelecType. See Chapter 3.

Data Dump Mode

The printer has a feature to find the cause of communication problems between the printer and application programs. In data dump mode a printout of the codes reaching the printer is produced.

1. To enter **the** data dump mode, hold down the **FORM FEED** and **LINE FEED** buttons at the same time while you turn **on the** printer.

2. Next, run either an application program or one you **have** written in any programming language. Your printer prints all the codes sent to **the** printer in hexadecimal format as **shown** below:

```
1B 40 1B 52 00 1B 74 01  36 12 1B 50 1B 70 00   .@.R..t..6..P.p.
20 20 54 68 69 73 20 6?  20 61 6E 20 65 78 61     This is an exa
6D 70 6C 65 20 6F 66 20  20 64 61 74 61 20 64   mple of a data d
75 6D 70 20 70 72 69 6E  F 75 74 2E 20 54 68   ump printout. Th
69 73 20 66 65 61 74 75  5 20 6D 61 6B 65 73   is feature makes
0A 20 20 20 20 20 69 74  5 61 73 79 20 66 6F         it easy fo
```

3. To turn off **the** data dump mode, press the **ON LINE** button to take **the** printer off line, and then turn off the printer. (The data dump mode can also be cancelled by sending an INIT signal from the computer.)

Look at **the** data dump shown in Step 2. By comparing the characters printed in the right column with the printout of **the** hexadecimal codes, you can check what codes are being sent to **the** printer. If characters are printable, they appear as their true ASCII characters. Nonprintable codes, such as control codes, are represented by dots.

As an example of how to interpret a data dump printout, look at the first three hex codes on the second line of the printout sample (20 20 54). Each **hex** 20 represents a space, while hex 54 represents **the** letter T Check the second line of **the** right column and you will find the letter T preceded by two spaces.

The chart below interprets part of the first line of codes:

Hex codes	Command	Function
1B 40	ESC @	Initialize printer
1B 52 00	ESC RO	Select USA character set
1B 74 01	ESC tl	Select Epson Extended Graphics

Chapter 7

Using Printer Options

The Cut Sheet Feeder

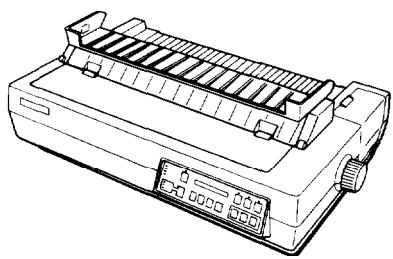
The optional cut sheet feeder (#7343) gives you easier and more efficient handling of single sheet paper. You can use the cut sheet feeder without removing continuous paper. Up to 150 sheets of standard bond paper can be stacked in each cut sheet feeder bin at one time, and a new sheet is loaded automatically whenever required.

Installation

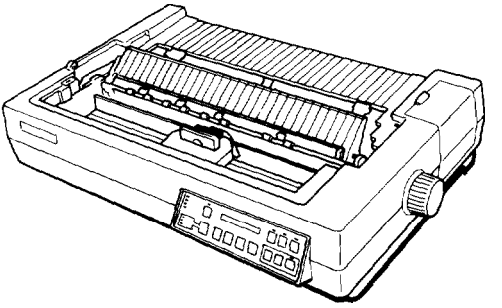
First, assemble the cut sheet feeder by following the instructions provided in its accompanying manual.

Before installing the assembled cut sheet feeder, be sure that:

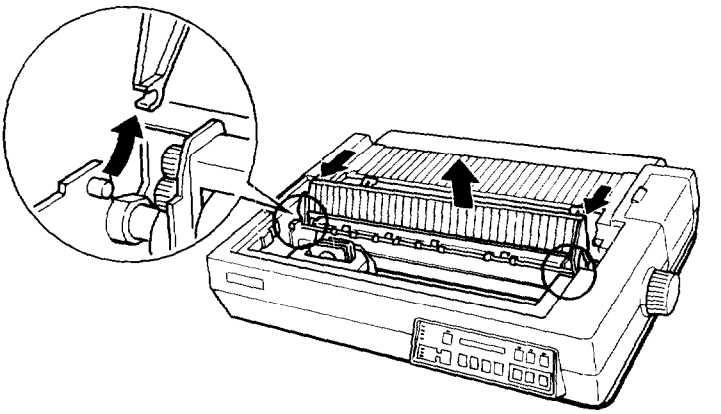
- The paper guide is removed.
- The printer is turned off.
- The optional pull tractor unit, if installed, is removed.



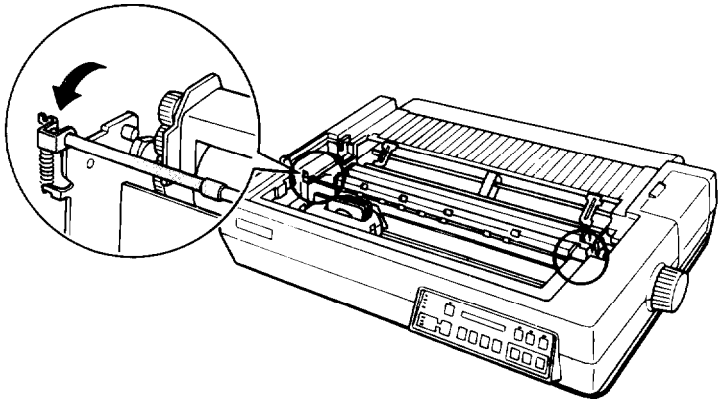
1. Remove the printer cover and paper guide cover.



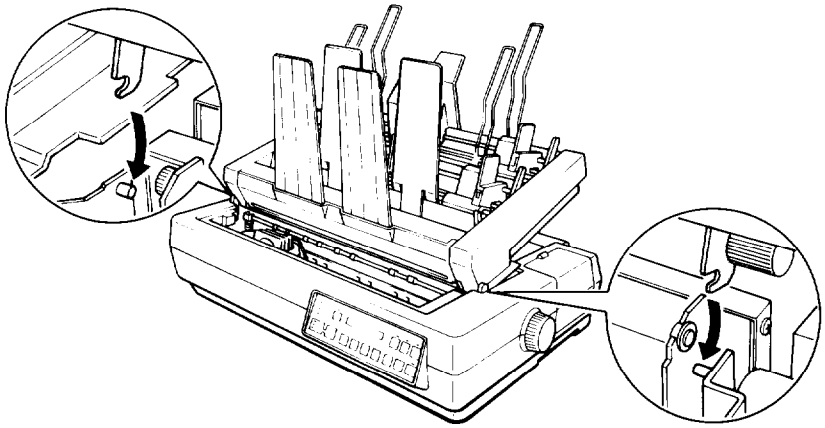
2. Remove the paper eject guide by tilting it forward, then lifting it up and off.



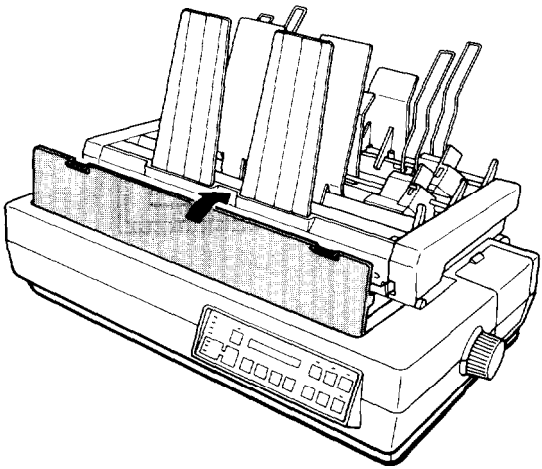
3. Pull the paper bail toward you.



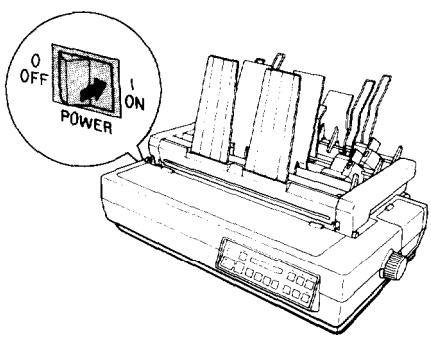
4. Hold the assembled cut sheet feeder in both hands and fit its notches over the red pins in the printer.



5. Reattach the printer cover.

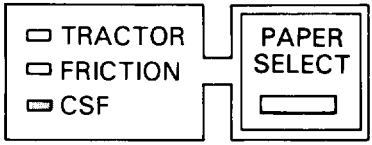


6. Turn on the printer.



7. Be sure that the printer is off line. If it is not, press the **ON LINE** button to set the printer off line.

8. Press the **PAPER SELECT** button until **the CSF** light comes on and CSF bin 1 is briefly displayed. Press the **PAPER SELECT** button again if you wish to select CSF bin 2. If continuous paper is loaded, the paper is reverse-fed.



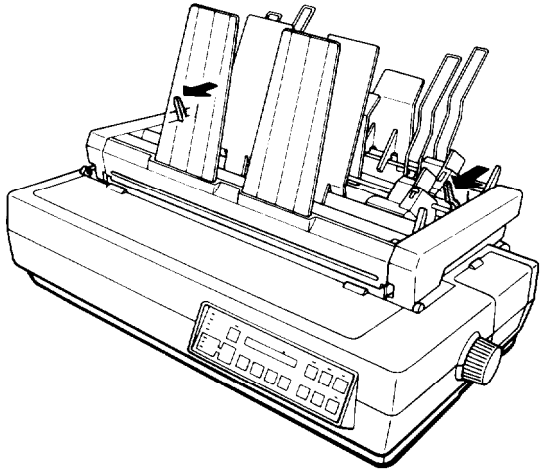
Loading paper

No matter which cut sheet feeder (CSF) bin you select, the paper is loaded in the same way. The procedure for loading CSF bin 1 (the front bin) is described in the following example.

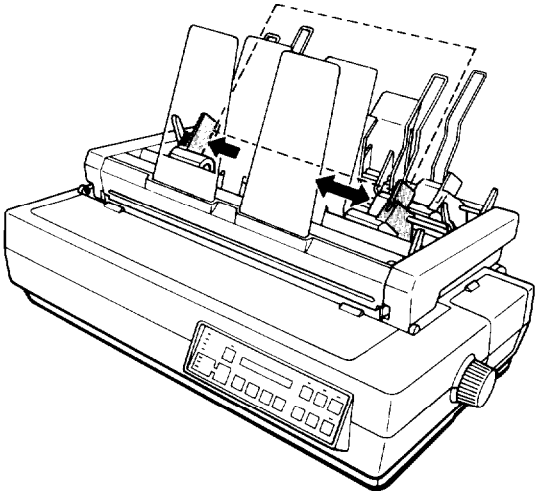
Before loading the paper, be sure that:

- The cut sheet feeder is securely installed onto the printer.
- The desired bin is selected by the **PAPER SELECT** button.

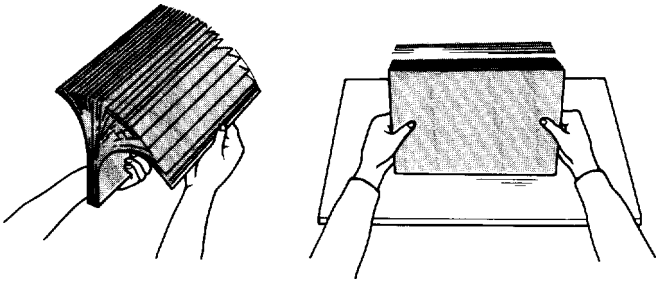
1. Pull the left and right paper levers of **the** selected bin forward until the paper guides retract and lock open to allow for paper loading.



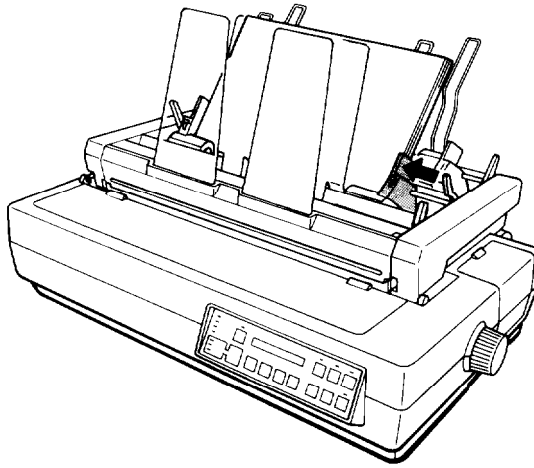
2. Slide the left paper guide all the way to the left. Next, slide the right paper guide to roughly match the width of your paper.



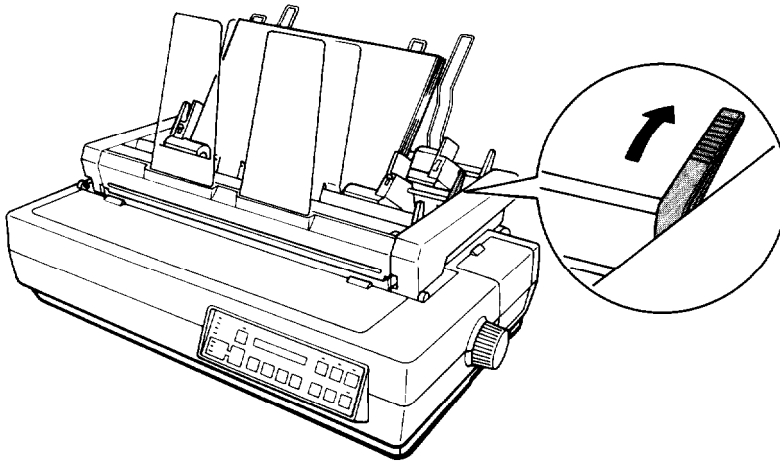
3. Take a stack of paper and fan it. Next, tap the paper on a flat surface to even up the stack.



4. Insert the paper along the left paper guide. Then, adjust the position of the right paper guide so that it closely matches your paper's width. Be sure that the position of the guide allows the paper to move up and down freely.

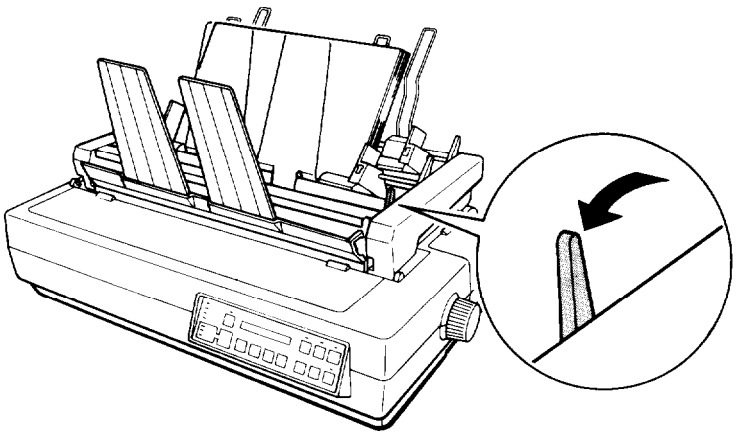


5. Push the paper levers back until the paper is clamped against the guide rollers. The levers will not close completely if too much paper is used. If this happens, remove some paper from the stack and try again.



6. You can choose to have the printer eject the sheets with the printed side facing downward or upward. To have the printer eject the sheets with the printed side facing downward, pull the front lever on the right side of the cut sheet feeder forward. To eject the sheets with the printed side facing upward, push this lever back.

   If you eject the sheets with the printed side facing downward, the paper is collated as it prints. If you eject the sheets with the printed side facing upward, sheets are fed in reverse order but more sheets can be stacked in the cut sheet feeder.



Caution: Never move this lever **during** printing.

Testing the printer in the cut sheet feeder mode

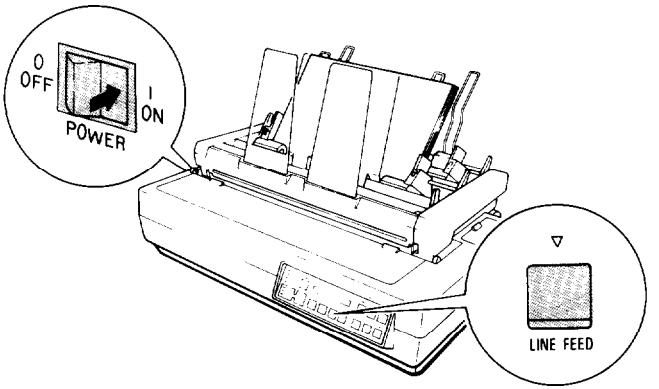
When you perform the cut sheet feeder self test, the printer counts the number of lines **on** the page and prints out this number at the bottom of the first page. The number of lines counted by the printer becomes the default page length setting. This setting, however, can be overriden by SelecType or by software commands.

The procedure for running the self test is the same as when the cut sheet feeder mode is off.

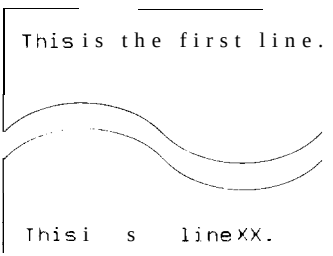
Before running the self test in the cut sheet feeder mode, be sure that:

- The desired bin is selected by **PAPER SELECT** button.
- The printer is turned off.
- A stack of paper is inserted.

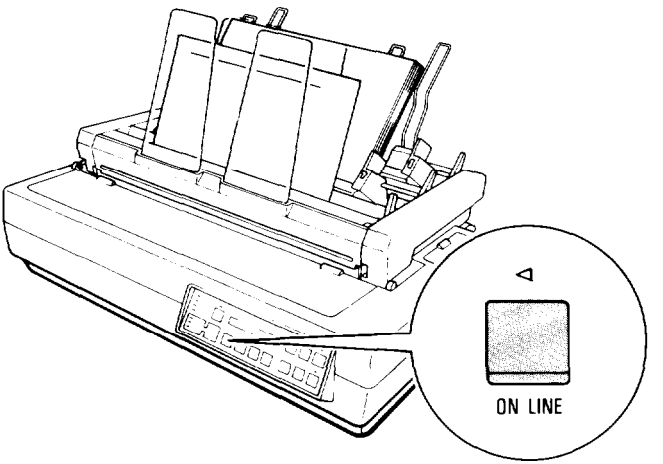
1. While holding down **the LINE FEED** button (draft mode) or **FORM FEED** button (LQ mode), turn on the printer.



The following figure shows part of the printout for the first sheet of **the** draft mode self test. The printout of the second sheet is similar to the original self test described in Chapter 1.



2. The self test continues until the paper runs out or until you press the **ON LINE** button. To stop the test, press the **ON LINE** button.



3. To end the self test, if paper is loaded, press **the LOAD/EJECT** button to eject it. Then, turn off the printer.

Loading envelopes

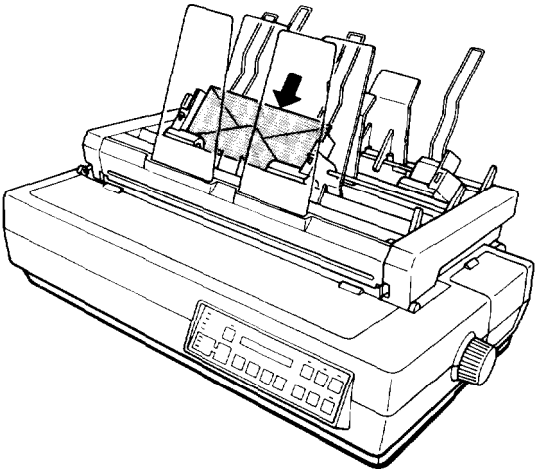
Envelopes are loaded in much the same way as regular paper.

To load envelopes, be sure that:

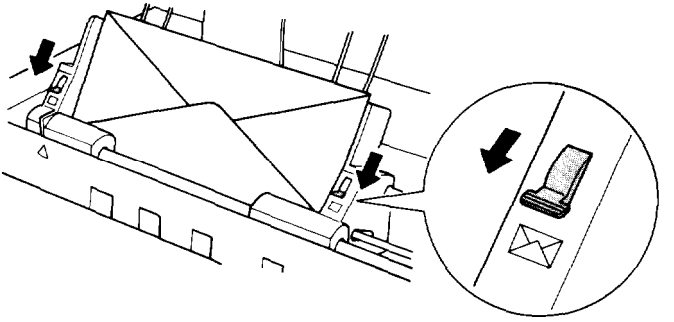
- The printer is off line.
- The **CSF** light is on.
- CSF bin 1 is selected by **PAPER SELECT** button.

Caution: When printing envelopes, be sure to load them into bin 1, never into bin 2.

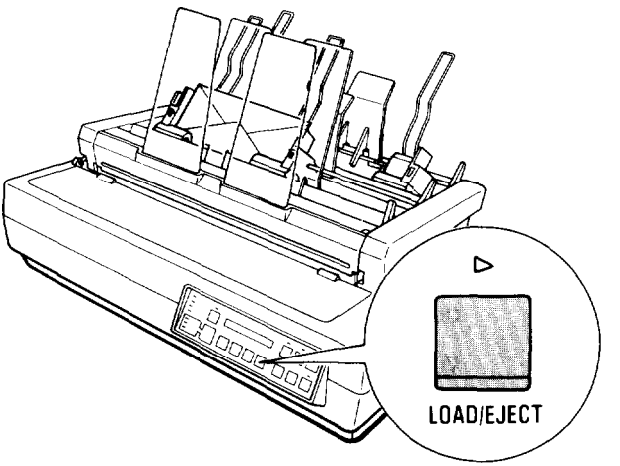
1. Take a stack of envelopes and fan it; then tap the stack on a flat surface to even it up. Insert the envelopes into the front bin.



2. Push down on the two front levers until they lock into position.



3. Press the **LOAD/EJECT** button to load an envelope. Then press the **ON LINE** button to start printing.



Using the cut sheet feeder

After stacking paper in the cut sheet feeder, be sure that the **ON LINE** light is lit. When the printer is on line, a new sheet of paper loads automatically whenever a printable character or line feeding command is sent to the printer. Subsequent sheets are automatically loaded as needed.

Note: Be sure that you run the self test described earlier in this chapter the first time you use the cut sheet feeder and whenever you change to a different paper size.

When the selected paper bin is empty, the printer automatically goes off line and the **PAPER OUT** light goes on. To resume printing, stack more paper, then press the **ON LINE** button.

Note: If you turn off your printer during a paper out or paper jam condition, any data remaining in the printer's buffer is discarded.

Control panel operation

To operate the cut sheet feeder from the control panel when the printer is in cut sheet feeder mode, be sure that the printer is off line.

LINE FEED: Press to feed the paper one line, or hold it down to feed the paper continuously.

FORM FEED: When there is no paper in the printer, press to load the paper manually. (However, note that paper loads automatically when you print.) When there is paper in the printer, press to eject the sheet without loading the next sheet.

LOAD EJECT: When there is no paper in the printer, press to load the paper manually. (However, note that paper loads automatically when you print.) When there is paper in the printer, press to eject the sheet without loading the next sheet.

Software operation

The following commands cause the printer to eject the sheet in the printer without loading the next sheet. The printer must be on line to control the cut sheet feeder with software commands: FF and ESC EM R.

Note: The ESC EM command controls the operation of the cut sheet feeder. For more information about this command, see Chapter 8.

If the paper reaches the bottom of the print area when any of the following line feeding commands is used, the sheet in the printer is automatically ejected and the next sheet is loaded: LF, VT, and ESC J.

Setting up your software

When you switch to cut sheet feeder fed paper from another paper feed system, you usually need to change the settings of your software program. Because of the physical requirements of feeding a single sheet of paper, sheet feeders always create an unprintable top and bottom margin on each sheet. To work properly, your software program needs to know how many printable lines are available on the page.

Paper comes in many different sizes, and it is sometimes difficult to know exactly how many printable lines per page you have. When you run the self test for the cut sheet feeder, the LQ-2550 automatically counts and prints out the number of lines that are available on any size of paper. This is the number of lines you should use as the page length in your software setup. See the section on testing the printer in this chapter for details.

In addition to the number of printable lines, which your software may refer to as page length or form length, you may need to set the top margin, the bottom margin, and the actual number of lines to be printed on the page. The cut sheet feeder for the LQ-2550 normally creates a two-line unprintable top margin. Therefore, if you want a total top margin of six lines (one inch), you should set the top margin in your software to four lines. The LQ-2550 sheet feeder usually creates an unprintable bottom margin of about three lines, so to create a total bottom margin of six lines (one inch), you should set the bottom margin in your software to three lines. With a total page length of 61 printable lines, for example, the number of printed lines per page would be 54 (9 inches).

Some software designed only for printing on continuous forms will not use the Form Feed or ESC EM commands recommended for proper sheet feeder operation. This type of software may not have a sheet feeder setup mode or allow for margin settings, and it may only use Line Feeds to advance to the next form. Your sheet feeder can still work with most of these applications without any problems. Simply insert the paper you will be using into the sheet feeder, use the self test to print out the number of printable lines, then use that number of lines as the page length setting in your software. If you change paper sizes, repeat this process. Your sheet feeder will work as if it were feeding a continuous form. If your software does not allow you to set the page length, consult your software manufacturer.

The following is a typical example of a software setup required for proper operation of your cut sheet feeder. Not all software is set up the same, so you may find that a bit of experimentation is required before you find the best equivalent settings to use.

To maintain 54 printed lines per page make the following changes:

	Continuous form settings	Cut sheet feeder settings
Page Length	66	61
Top Margin	6	4
Bottom Margin	6	3

Many word processors and other software give you two ways to change these settings:

- You can change the settings in each individual file you print.
- Alternatively, you can change the program's default settings so that every time you use the program, these new settings are in effect.

If your program has additional features, such as headers and footers, you have to compensate accordingly.

Adjusting the loading position

If necessary, you can adjust the loading position of the paper in bin 1 or bin 2 with the micro-adjustment feature described in the section on setting the loading position in Chapter 3.

The micro-adjustment feature sets a new loading position for as long as the power remains on. If the power is turned off, the loading position is returned to the factory setting.

Changing the loading position with the micro-adjustment feature may affect the number of lines per page. You may need to change your software settings again for this new page length.

Switching between the cut sheet feeder and continuous paper

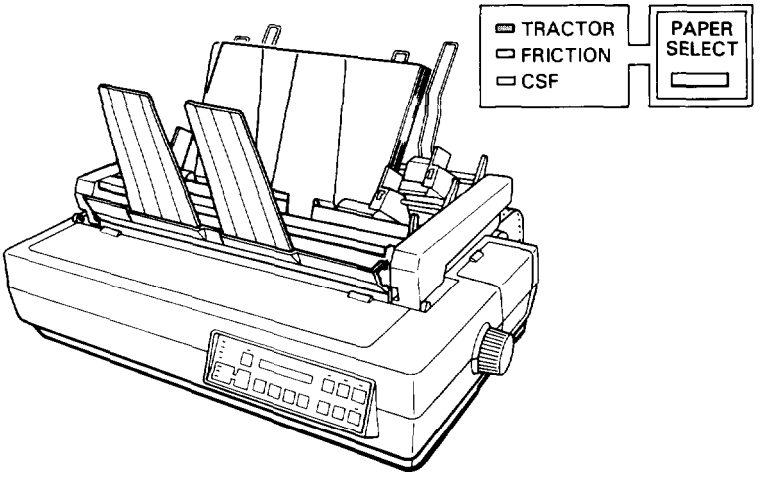
The LQ-2550 allows you to easily switch between the cut sheet feeder and the tractor feeding system without having to remove either the feeder or the continuous paper supply.

To switch between these two paper feeding systems, be sure that:

- Continuous paper is loaded in the standby position.
- The cut sheet feeder is installed.
- The printer is off line.

Note: If you wish to use the short tear-off feature, you can tear off the perforation of the continuous paper at the cut sheet feeder's tear-off edge. See Chapter 3 for more information on the short tear-off feature.

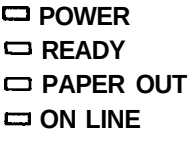
1. To switch from cut sheet feeder operation to continuous paper, press **the PAPER SELECT** button until the **TRACTOR** light goes on. Continuous paper is now fed to its loading position, and the front section of the cut sheet feeder is automatically tilted forward.



2. Remove the two paper supports at the front of the cut sheet feeder so that continuous paper is ejected smoothly.

3. Press the **ON LINE** button to set the printer on line.

a



Caution: Never attempt to print on labels when the cut sheet feeder is installed.

Loading single sheets

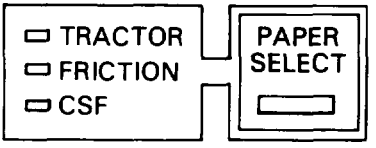
Your cut **sheet** feeder also has a single sheet loading feature. This feature is especially useful because it allows you to switch to a different type or sire of paper without replacing the supply of paper already in your cut sheet feeder.

Your printer uses **the** same page length for **the** single sheet loading feature as the page length set for CSF bin 1. Thus, if you wish to change the page length for this feature, adjust the page length for CSF bin **1.** (See the Page Length section in Chapter 3.)

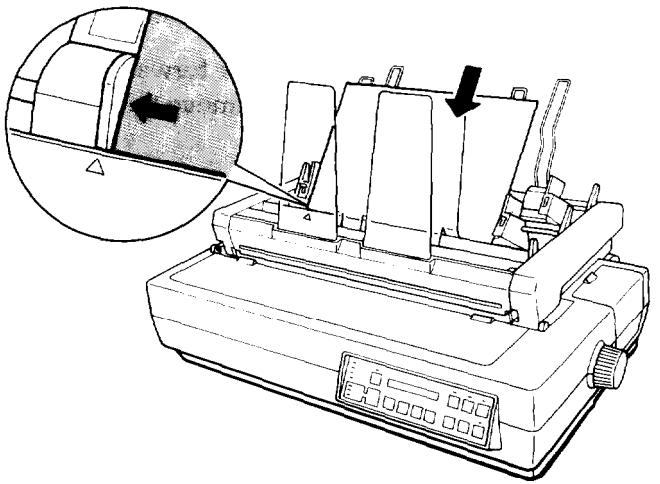
Before loading **a single** sheet, be sure **that:**

- The cut sheet feeder is installed.
- The printer is off line.

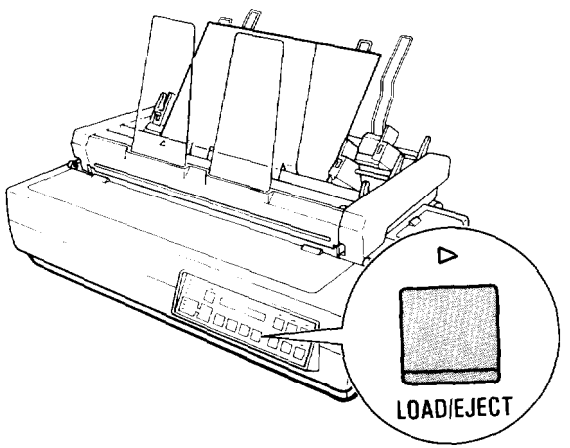
1. Press the **PAPER SELECT** button until the **CSF** light goes on and CSF bin 1 is briefly displayed.



2. Align the single **sheet** with the marking on the left paper guide **on the** front of CSF bin 1. Then slide the sheet into the printer path until you feel resistance.



3. Press **the LOAD/EJECT** button to load the sheet. (If your document is more than one page long, the next sheet is automatically loaded from the cut sheet feeder's paper supply.)

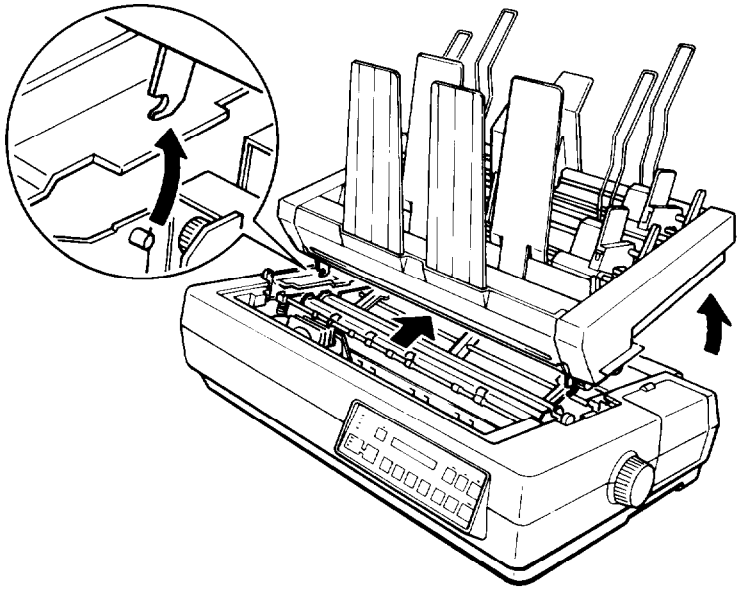


Removing the cut sheet feeder

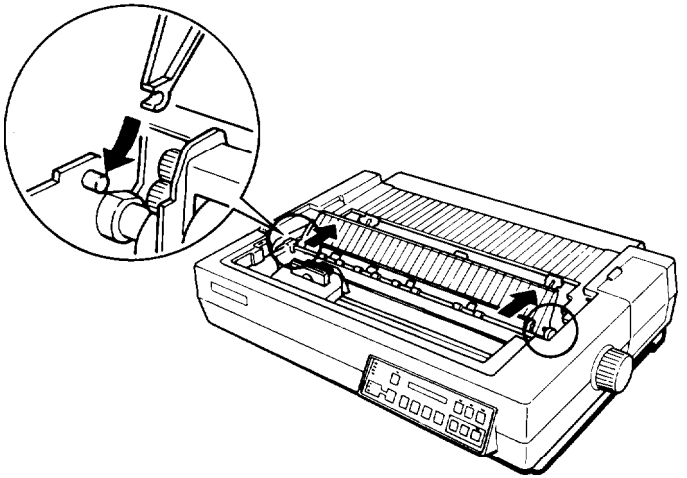
Before removing the cut sheet feeder, be sure that:

- The printer is turned off.
- Any paper stacked in the cut sheet feeder is removed.

1. Tilt the back section of the cut sheet feeder forward to release its notches from the printer's red pins and remove the cut sheet feeder.



2. Replace the paper eject guide by fitting its notches onto the red pins inside the printer at each side, then tilting the paper eject guide back slightly.



3. Store the removed cut sheet feeder in its original box and packing materials.

The Pull Tractor

The optional pull tractor (#7314) provides optimum continuous paper handling. It is best used for continuous pre-printed forms, multi-part forms, labels, and to obtain the highest quality graphics. For best results, use the pull tractor along with the built-in push tractor, as described in this section.

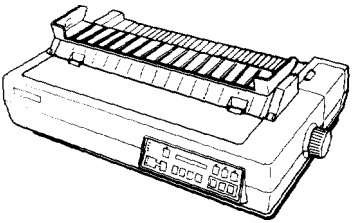
The short tear-off feature cannot be used with the pull tractor. Before you start printing with the pull-off tractor, make sure that the TEAR OFF light is off.

Installation

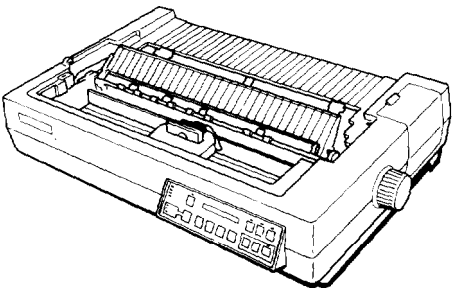
Before installing the pull tractor, be sure that:

- The paper guide is removed.
- The printer is turned off.

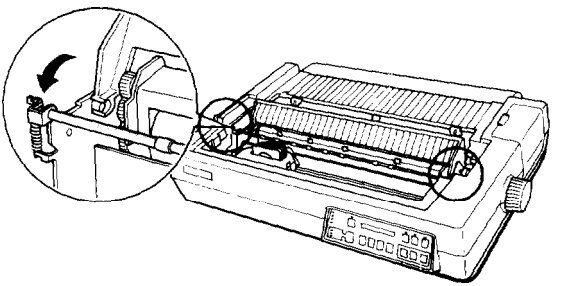
- The cut sheet feeder, if installed, is removed.



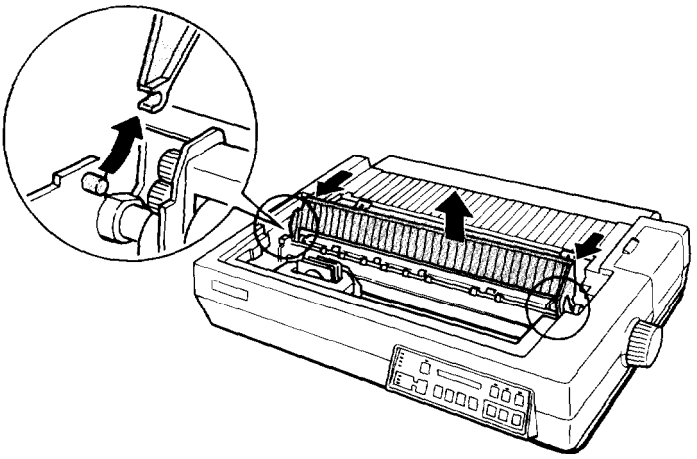
1. Remove the printer cover and paper guide cover.



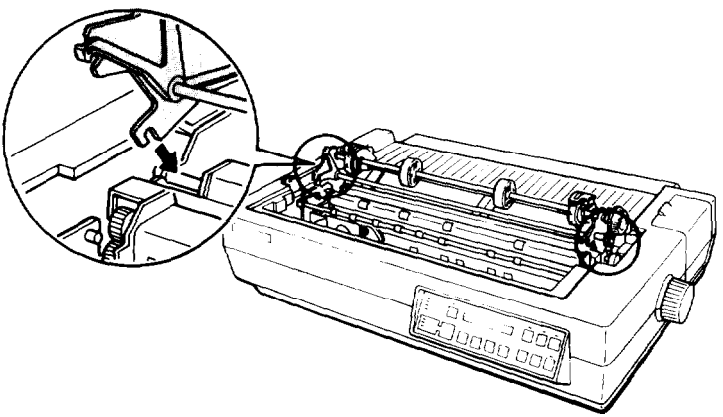
2. Pull the paper bail toward you.



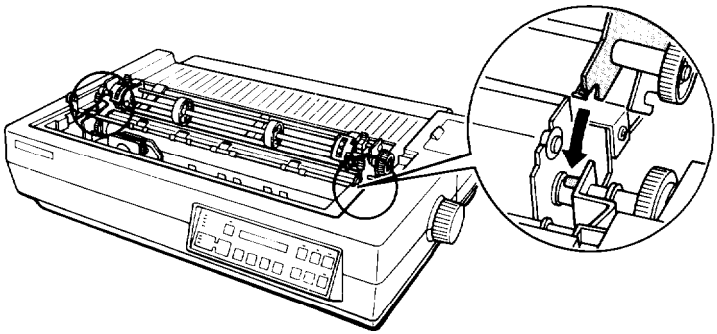
3. Remove the paper eject guide by tilting it forward, then lifting it up and off.



4. Hold the pull tractor with the gears to the right. Fit the rear notches on the tractor over the rear mounting rods on the printer, as shown in the following illustration.



5. Tilt **the** tractor unit toward you until the front latches click in place over the red front mounting rods of the printer.



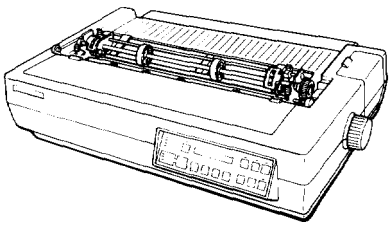
6. Attach **the** printer cover.

Loading paper

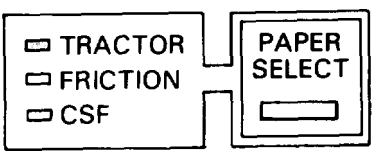
Before loading continuous paper with the pull tractor, be sure **that:**

- The pull tractor is installed.
- The printer cover is installed.
- The paper guide cover is removed.
- The paper guide is removed.

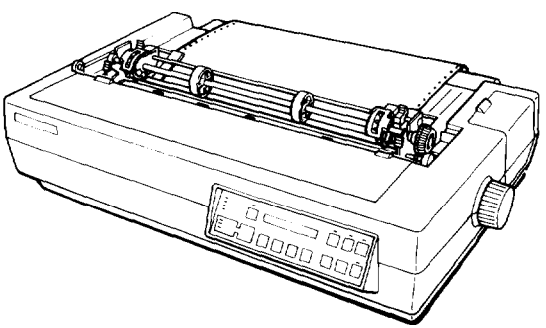
Caution: The short tear-off function cannot be used with the pull tractor. Before you start printing with the pull tractor, be sure that the **AUTO TEAR OFF** option in SelecType is off.



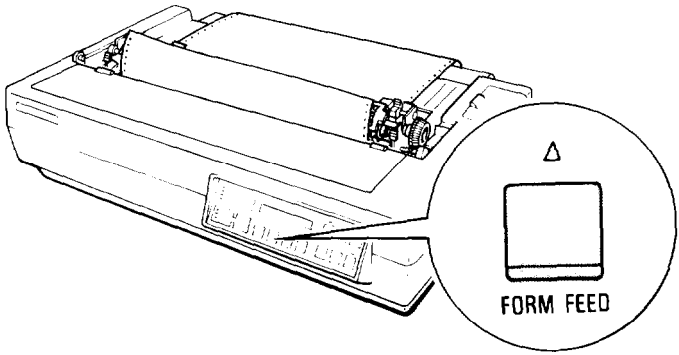
1. Turn on the printer. Then press the **PAPER SELECT** button until **the TRACTOR** light comes on.



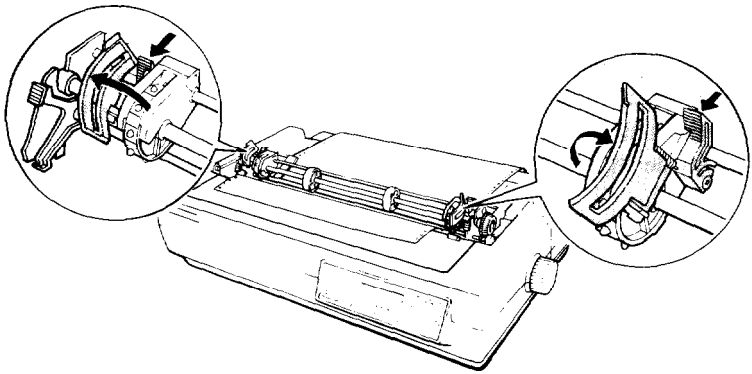
2. Load continuous paper in the push tractor as described in steps 2-7 in the section on loading continuous paper in Chapter 2, with one exception. In step 2, position the left sprocket unit about 1/4 of an inch from the left before locking it in place.



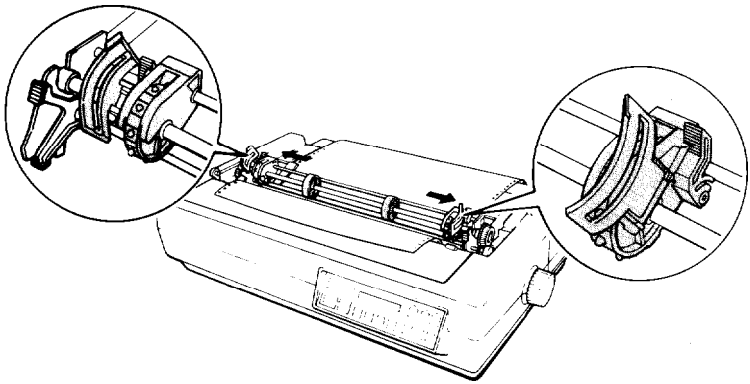
3. After the paper is loaded in the push tractor, see that the printer is off line. Press the **LOAD/EJECT** button to load the paper. Then press the **FORM FEED** button to advance the paper one page so that you can fit the paper onto the pull tractor.



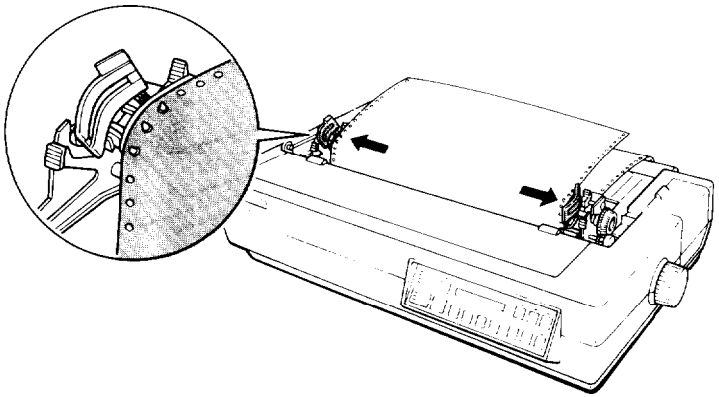
4. Open the sprocket covers, and release the sprocket lock levers.



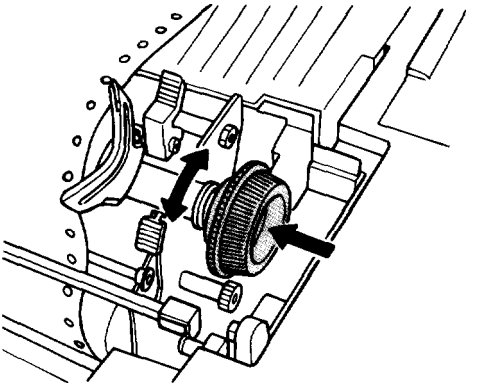
5. Adjust the sprocket units to match the width of the paper and adjust the paper supports so they are evenly placed between the sprocket units.



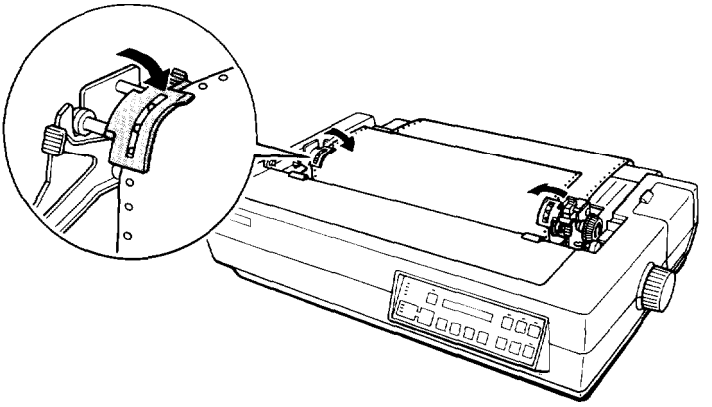
6. Fit the holes of the paper over the tractor pins of the sprocket units, adjusting the position of the sprocket units as necessary.



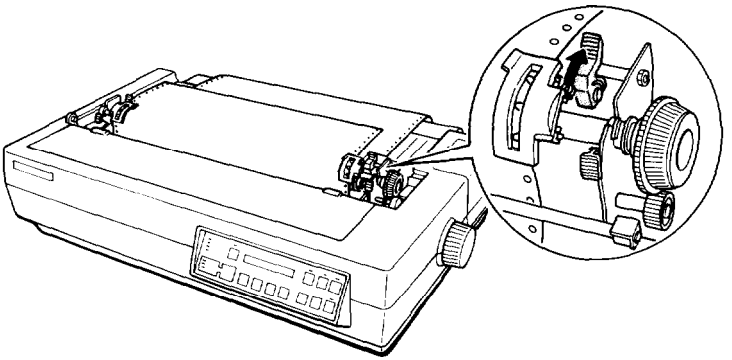
7. If the paper does not fit exactly onto the tractor pins, press in on the pull tractor feed knob and turn it in the desired direction.



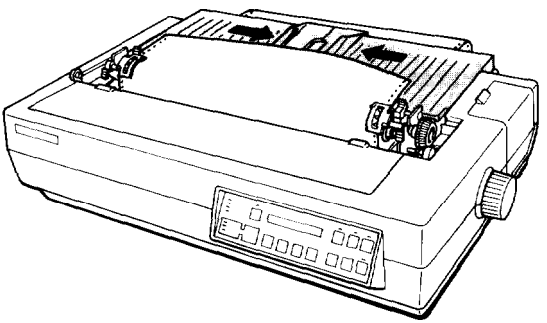
8. Close the sprocket covers.



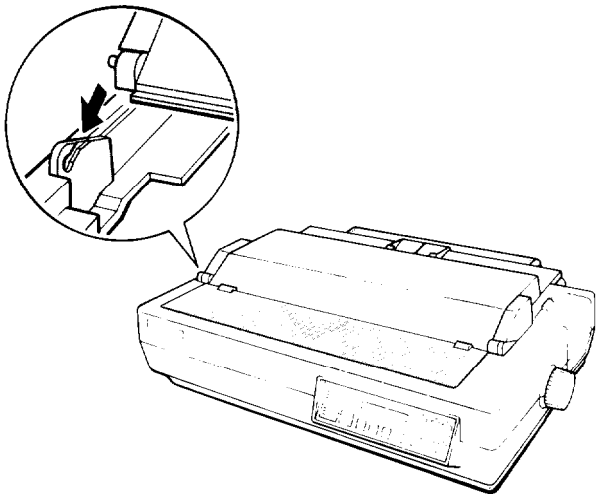
9. See that the paper is not crooked or wrinkled and lock the sprocket units in place.



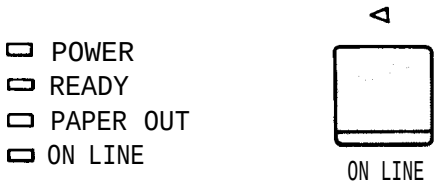
10. Attach the paper guide and lower it so that it is resting on top of the printer. Center both edge guides.



11. Align the pins of the pull tractor cover with the slots on the printer and attach the cover.



12. Press the **ON LINE** button to set the printer on line.

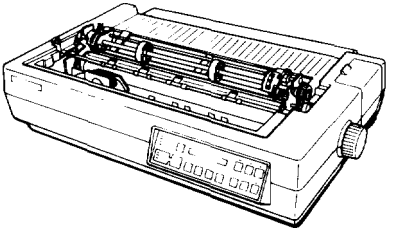


Caution: Before you begin printing, be sure to check the page length and skip over perforation settings, and readjust the settings if necessary. Setting procedures are described in Chapter 3.

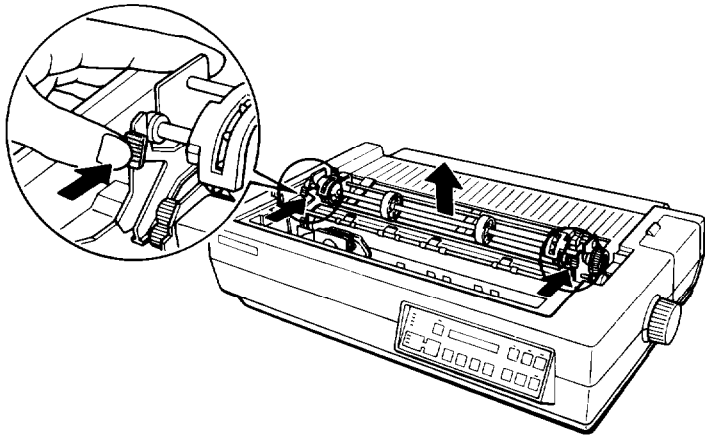
Removing the pull tractor

Before removing the pull tractor, be sure that:

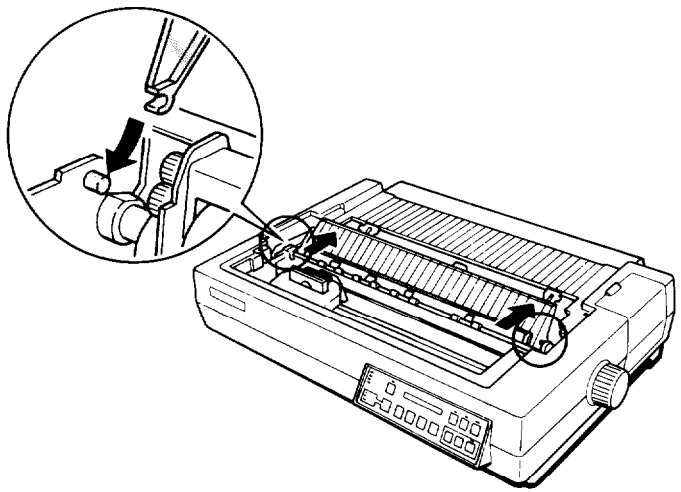
- The printer is turned off.
- The pull tractor cover and printer cover are removed.
- Any paper loaded in the unit is removed.
- The paper guide is removed.



1. Press the tabs on the pull tractor. Then tilt the tractor back and lift it off the printer.



2. Replace the paper eject guide by fitting its notches onto the pins inside of the printer at each side, then tilting the guide back slightly.



3. Store the pull tractor in its original packing materials and box.

Interface Boards

There are a number of optional interfaces that can be used to supplement the capabilities of your printer's built-in serial and parallel interfaces.

Choosing an interface

The following information should give you a general idea of the features provided by these optional interface boards. Optional interfaces **can** be divided into the following categories:

- Serial interfaces.
- The IEEE-488 interface offers standardized connections, trouble-free operation, and the ability to connect computers, printers, and other devices on the same line so they can share data freely.

If you are not sure whether you need an optional interface, or would like to know more about interfaces, check with your Epson dealer.

Compatible interfaces

The following is a list of Epson interfaces that are compatible with your LQ printer.

Interface number	Name
#8143	New serial interface
#8148	Intelligent serial interface
#8165	Intelligent IEEE-488 Interface

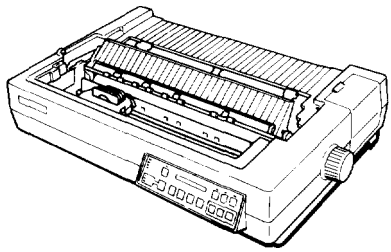
All Epson interfaces have the EPSON name printed on them. If the board has an identification code printed on it, it is a four-digit number beginning with 8, and should correspond to one of the numbers listed in the table above.

Installing the interface board

The optional interface boards available for your printer are easy to install. The only tool needed is a cross-head screwdriver.

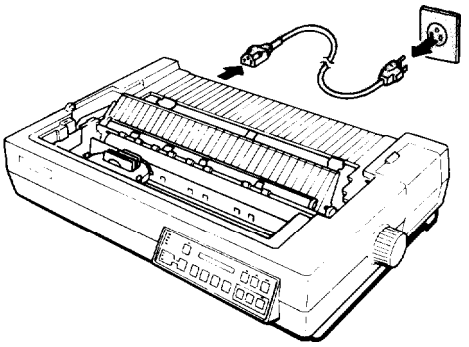
Before installing an optional interface board, be sure that:

- Continuous feed paper is removed.
- The printer and computer are turned off.
- The parallel cable is disconnected from the printer and the computer.
- The paper guide and the paper guide cover are removed.
- The printer cover is removed.
- Any installed printer option (such as the cut sheet feeder or pull tractor) is removed.
- The cable cover is removed.
- Any DIP switches or jumpers on the interface board are set according to the instructions in your interface board manual.



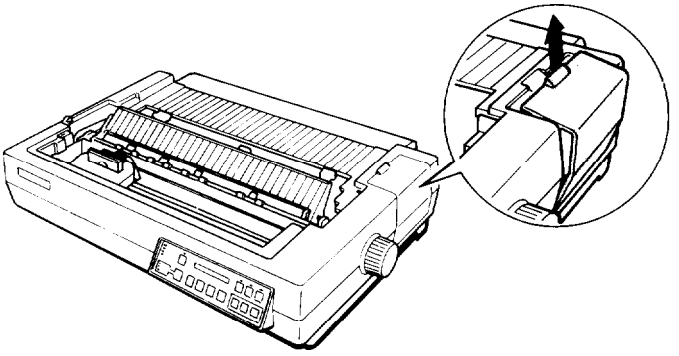
Removing the upper case

1. Unplug the power cable from the electrical outlet. Then unplug the cable from the rear of the printer.

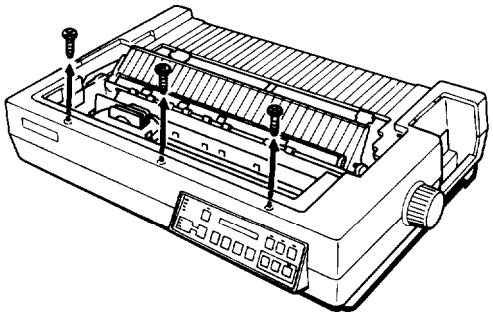


WARNING: High voltages are present inside the printer when the power is on. Do not attempt to remove the upper case unless the printer is turned off and the power cord is unplugged. Also, try not to touch contacts on the circuit board of the printer because many of the components can be destroyed by the static electricity in your body.

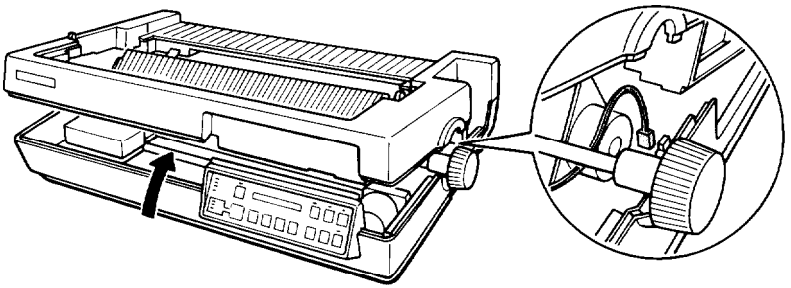
2. Remove the font compartment cover.



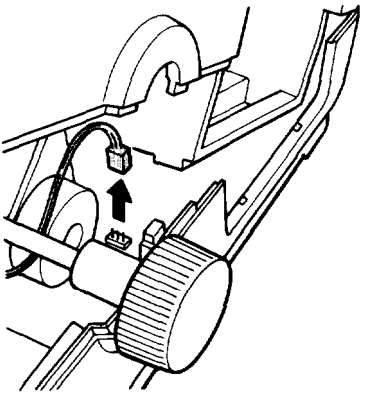
3. Using a cross-head screwdriver, remove the three retaining screws located deep inside of the slots at the front of the printer.



4. Raise the upper case slightly. Do this with caution, because the upper and lower cases are connected by a cable.

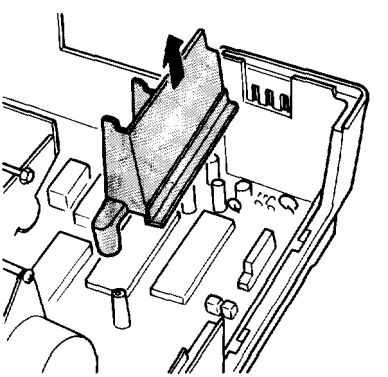


5. Remove the connector labelled CN21 as shown in the following illustration. Then remove the upper case completely.

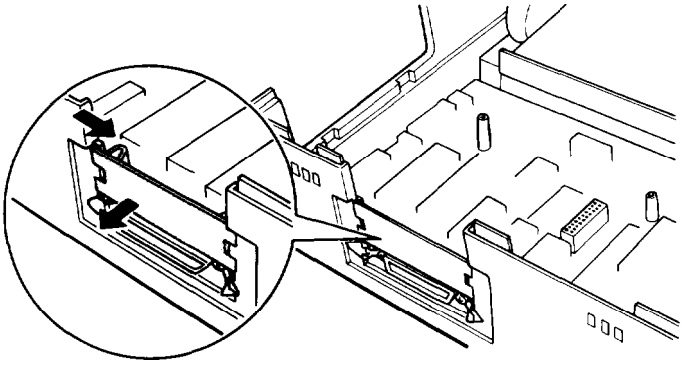


Caution: Be very careful when you remove or attach the upper case to avoid damaging the printer.

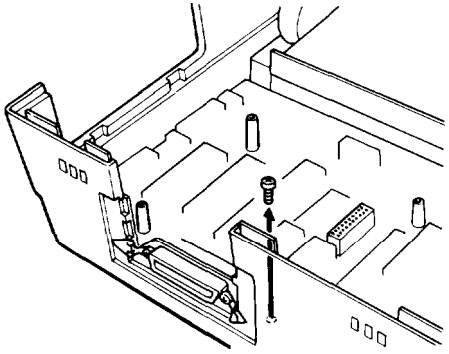
6. Remove the separator.



7. Remove the shield plate above the parallel interface by pressing in on the plastic clips located at the back of the plate. (The following illustrations show a rear view of the printer.)

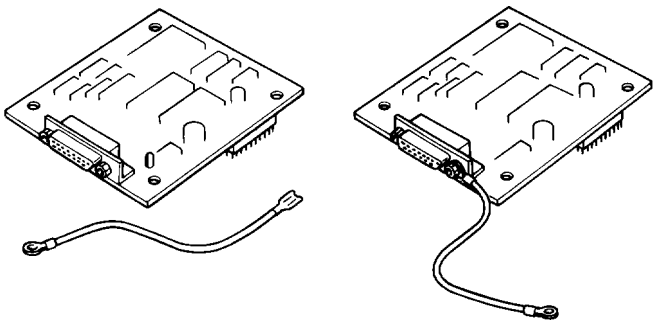


8. Remove one of the screws labelled CG (chassis ground) from the main board. The illustration shows you the location of the CG screw that you should remove.



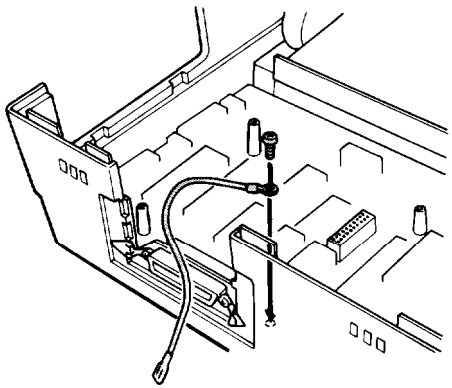
Installing the board

There are two basic types of interface board designs, which slightly change the way they are installed in the printer. (The frame ground wire is attached for one type and not attached for the other.) This difference does not affect the operation of the interface in any way. Check to see which type of interface board you have and then follow the instructions for that type of board.

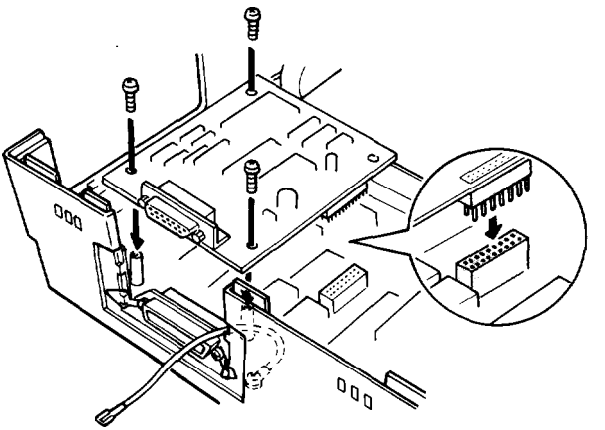


FG wire not attached

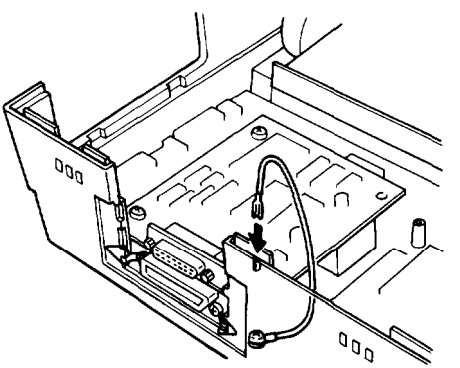
1. Use the CG screw to attach the round end of the FG (frame ground) wire to the main board and position the other end as shown.



2. Carefully insert **the** pins on the optional interface board into the mating connector on the main board; then secure the board with three of the screws provided.



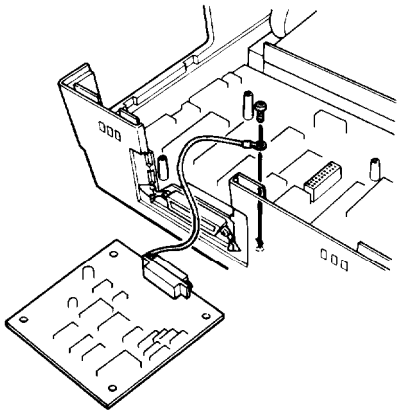
3. Attach the plug end of the FG wire onto the FG pin located on top of the interface board.



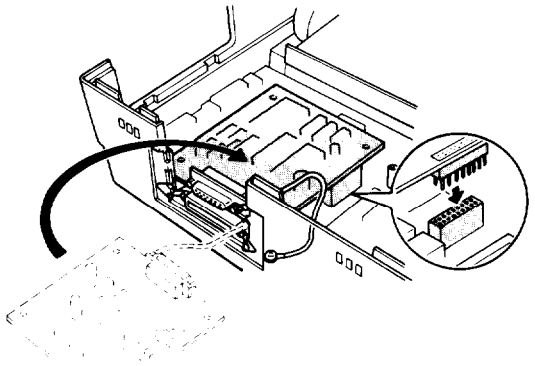
4. Reattach the upper case as described in the section immediately following the next section.

FG wire attached

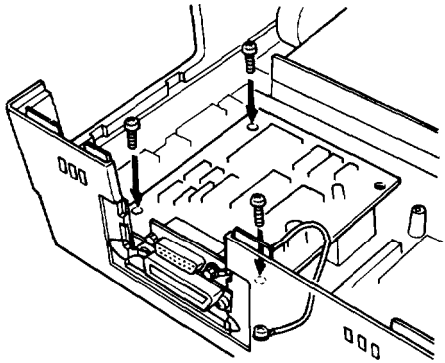
1. Carefully place the interface board next to the printer as shown below. Use the CG screw to connect the round end of the FG (frame ground) wire to the main board.



2. Holding the interface board level, rotate it clockwise into position and **attach** it to the main board. Make sure the connector pins are properly inserted into the mating connector.



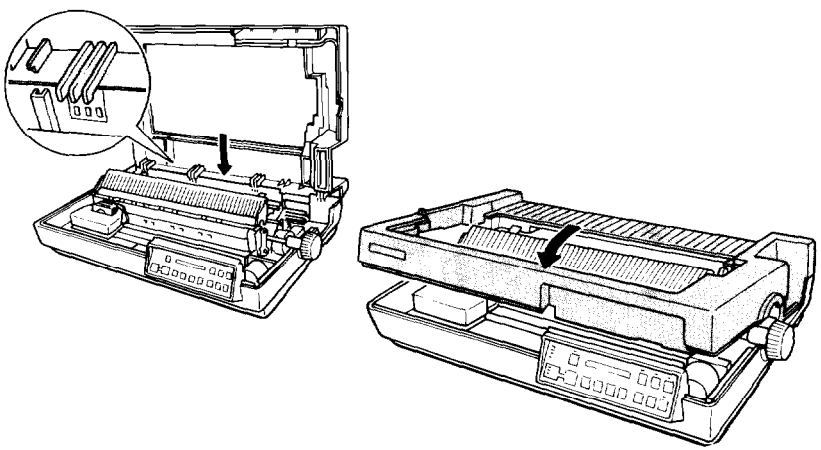
3. Secure the board with three of the screws provided.



4. Reattach the upper case as described in the following section.

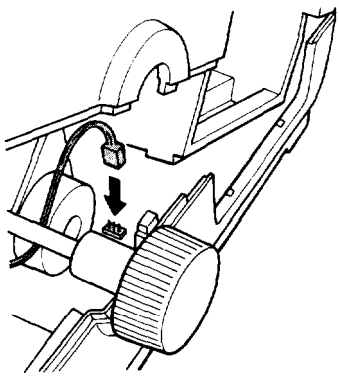
Attaching the upper case

1. Fit the hinges of the upper case into the openings in the lower case; then partially lower the upper case.

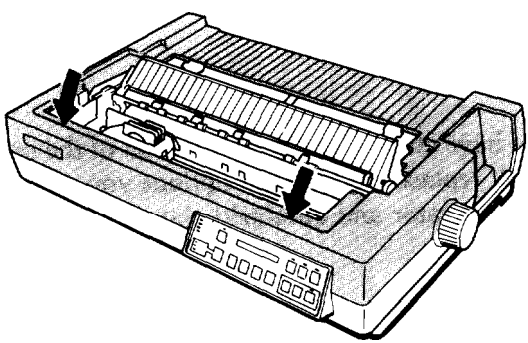


Caution: Take care not to pinch the FG wire between the upper and lower case.

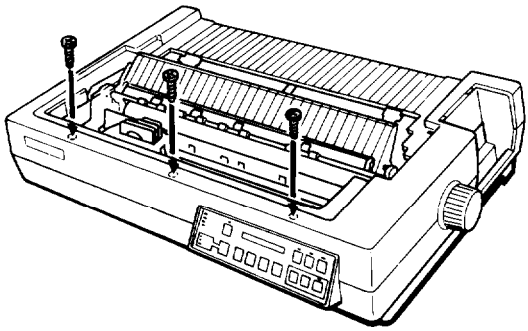
2. Carefully reinsert the cable into the connector labelled CN21 on the main board.



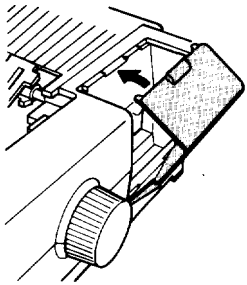
3. Close the upper case.



4. Secure the case with the three screws.



5. Reattach the font compartment cover.



6. Now that you have completed the installation of the optional interface board, replace any parts or options you removed earlier. (Note that the separator and the shield plate are not reattached.)

WARNING: Before you use the optional interface board, be sure to disconnect the printer cable from the printer's built-in parallel or serial interface. Two interface cables must not be installed at the same time.

7. Before you use the interface board, be sure to use SelecType to set the **INTERFACE** option to **Parallel.** (For details, see the CHANGE DEFAULTS section in Chapter 3.) This is necessary even if the optional interface is serial, because the board uses the parallel connections. (Serial conversion is performed, however.)

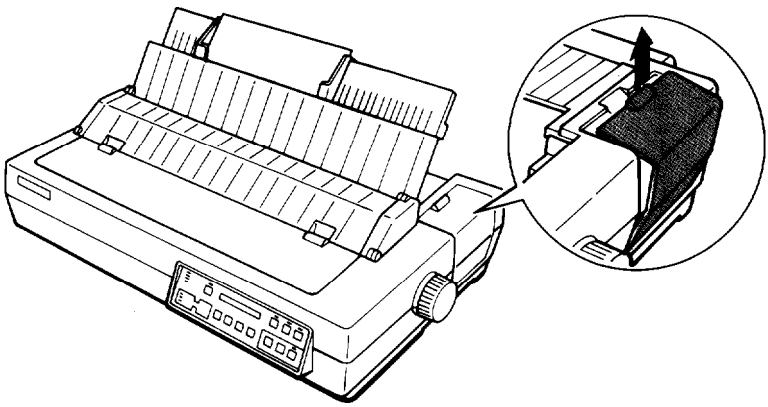
The Multi-Font Module

The optional Multi-Font Module gives you two additional Letter Quality fonts for your LQ printer: Orator and Orator-S. See the manual that comes with the module for further information.

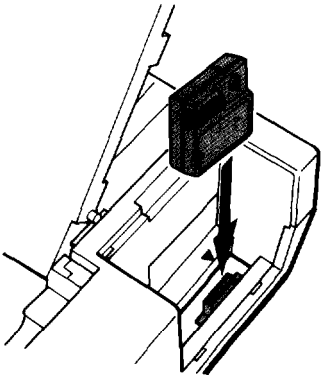
Installation

Before installing the Multi-Font Module, make sure that the printer is turned off. The module can be installed in either Slot A or B.

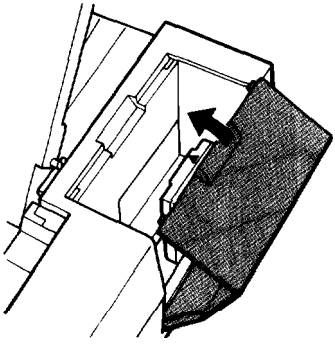
1. Remove the font compartment cover by lifting up slightly on the lip of the cover.



2. Plug the Multi-Font Module carefully into either Slot A or B. The arrow on the module should point toward the printer.



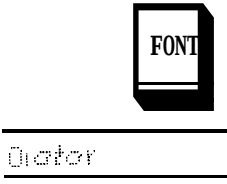
3. Reattach the font compartment cover.



Selecting a font

You can select a font in three different ways: by using software commands, by pressing the panel buttons, or by SelecType settings. To select a font via the panel button, simply press the FONT button until the desired font is displayed.

The following samples show the character set available for these additional fonts.



ORATOR

```
!"#$%&'()*+,-./0123456789:;<=>?ÀABCDEFGHIJK
LMNOPQRSTUVWXYZ°Ç§_ abcdefghijklmnopqrstuv
wxyzéùè ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíó
úñÑªº¿⌐¬½¼¡«»
```

WE'VE JUST SEEN YOUR EXCELLENT AD FOR MINIATURE ZEBRAS IN A RECENT BACK ISSUE OF TRADER'S TIMES.

ORATOR-S

```
!"#$%&'()*+,-./0123456789:;<=>?àABCDEFGHIJK
LMNOPQRSTUVWXYZ°Ç§_ abcdefghijklmnopqrstuv
wxyzéùè ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíó
úñÑªº¿⌐¬½¼¡«»
```

We've just seen your excellent ad for miniature zebras in a recent back issue of Trader's Times.

Chapter 8

Command Summary

This chapter lists and describes all the commands available on your printer. The Command Summary is divided by topics, but there is a list of the commands in numerical order beginning on page 8-5. If you know which command you are looking for, see this list to find the page number where it is described.

The Quick Reference card at the end of the book also contains a list of the commands divided by topic, with page references that direct you to full explanations of the commands.

The commands described in this summary are divided into the following subjects:

Printer operation	Print size and character width
MSB control	Print enhancement
Data control	Word processing
Vertical motion	Character tables
Horizontal motion	User-defined characters
Overall printing style	Graphics

Each command has a format section and a comments section. The format section gives the ASCII, decimal, and hexadecimal codes for the command. The comments section describes the effect of the command and gives any additional information necessary for using it.

The format section includes:

ASCII:	the sequence in standard ASCII characters
Decimal:	the sequence in decimal numbers
Hexadecimal:	the sequence in hexadecimal numbers

All three formats are equivalent, so you can pick the one best suited to your purpose. Variables are represented by italicized letters such as *n*, *n1*, and *m*. The variables are explained in the comments section.

Examples

The simplest type of command consists of sending a single character to the printer. For instance, to print in condensed mode, you send the code 15.

ASCII code:	SI
Decimal:	15
Hexadecimal:	OF

More complex commands consist of two or more character codes. For example, to print in the proportional mode the code format is the following:

ASCII:	ESC	p	n
Decimal:	27	112	n
Hexadecimal:	1B	70	n

In this case n can be either 1 (on) or 0 (off), to begin or end proportional printing. To turn on proportional printing from BASIC, use the following command:

```
LPRINT  CHR$(27);"p";CHR$(l)
```

For the following commands that use only 0 or 1 for the variable, either the ASCII codes 0 and 1 or the ASCII characters 0 and 1 can be used:

ESC U, ESC x, ESC p, ESC W, ESC S, ESC −, ESC %, and ESC w.

For example, in BASIC you can turn on double-wide with either of these statements:

```
LPRINT CHR$(27);"W";CHR$(1)  . . . . . ASCII code
LPRINT  CHR$(27);"W";"l"  . . . . . ASCII character
```

Control key chart

Some application programs can use control key codes for decimal values 0 through 27. The table below gives you the proper values. The Control Key column indicates that you press the control key at the same time you press the key for the letter or symbol in that column. For example, you press the control key and A at the same time to send the value 1.

Note: Some application programs **that** use this system cannot use Control-@, and many programs use the control keys for other purposes.

Dec.	Hex.	Cntl. Key
0	00	@
1	01	A
2	02	B
3	03	C
4	04	D
5	05	E
6	06	F
7	07	G
8	08	H
9	09	I
10	OA	J
11	OB	K
12	oc	L
13	OD	M

Dec.	Hex.	Cntl. Ke
14	OE	N
15	OF	O
16	10	P
		Q
18	12	R
19	13	S
		T
20	14	U
22	16	V
23	17	W
24	18	X
25	19	Y
26	1A	Z
27	1B	[

Commands in Numerical Order

The following list shows control codes and ESC sequences (with their decimal and hexadecimal values), and the page number where the complete command description can be found.

ASCII	Dec.	Hex	Description	Page
BEL	7	07	Beeper	8-12
BS	8	08	Backspace	8-19
HT	9	09	Tab horizontally	.8-20
LF	10	0A	Line feed	.8-14
VT	11	0B	Tab vertically	8-17
FF	12	0C	Form feed	8-13
CR	13	0D	Carriage return	8-12
s o	14	0E	Select double-wide mode (1 line).	.8-25
SI	15	0F	Select condensed mode	.8-24
DC1	17	11	Select printer	8-8
DC2	18	12	Cancel condensed mode	.8-25
DC3	19	13	Deselect printer	.8-9
DC4	20	14	Cancel double-wide mode (1 line).	.8-26
CAN	24	18	Cancel line	.8-12
DEL	127	7F	Delete character	.8-9
ESC SO	14	0E	Select double-wide mode (1 line).	.8-25
ESC SI	15	OF	Select condensed mode	.8-24
ESC EM	25	19	Cut sheet feeder mode	.8-10
ESC SP	32	20	Set intercharacter space	.8-30
ESC !	33	21	Master Select	.8-22
ESC #	35	23	Cancel MSB control	.8-11
ESC $	36	24	Set absolute print position	.8-19
ESC %	37	25	Select user-defined set	.8-33
ESC &	38	26	Define user-defined characters	.8-32
ESC *	42	2A	Select graphics mode	.8-35
ESC (-	40	28	Select Line	.8-29
ESC +	43	2B	Select n/360-inch line spacing..	.8-16
ESC -	45	2D	Turn underlining on/off	.8-29

ASCII	Dec.	Hex	Description	Page
ESC /	47	2F	Select vertical tab channel	8-18
ESC 0	48	30	Select 1/8-inch line spacing	8-15
ESC 2	50	32	Select 1/6 inch line spacing	8-15
ESC 3	51	33	Select n/180-inch line spacing	8-15
ESC 4	52	34	Select italic mode	8-31
ESC 5	53	35	Cancel italic mode	8-32
ESC 6	54	36	Enable printable characters	8-33
ESC 7	55	37	Enable upper control codes	8-34
ESC :	58	3A	Copy ROM to RAM	8-33
ESC <	60	3c	Unidirectional mode (1 line)	8-9
ESC =	61	3D	Set MSB to 0	8-11
ESC >	62	3E	Set MSB to 1	8-11
ESC ?	63	3F	Reassign graphics mode	8-36
ESC @	64	40	Initialize printer	8-8
ESC A	65	41	Select n/60-inch line spacing	8-16
ESC B	66	42	Set vertical tabs	8-17
ESC C	67	43	Set page length in lines	8-13
ESC C 0	67	43	Set page length in inches	8-13
ESC D	68	44	Set horizontal tabs	8-21
ESC E	69	45	Select emphasized mode	8-27
ESC F	70	46	Cancel emphasized mode	8-27
ESC G	71	47	Select double-strike mode	8-28
ESC H	72	48	Cancel double-strike mode	8-28
ESC J	74	4A	Perform n/180-inch line feed	8-16
ESC K	75	4B	Select single-density graphics	8-34
ESC L	76	4C	Select double-density graphics	8-34
ESC M	77	4D	Select 12 cpi	8-23
ESC N	78	4E	Set skip over perforation	8-14
ESC 0	79	4F	Cancel skip over perforation	8-14
ESC P	80	50	Select 10 cpi	8-23
ESC Q	81	51	Set right margin	8-18
ESC R	82	52	International character set	8-32
ESC SO	83	53	Select superscript mode	8-28
ESC S1	83	53	Select subscript mode	8-28
ESC T	84	54	Cancel superscript/subscript	8-28

ASCII	Dec.	Hex	Description	Page
ESC U	85	55	Unidirectional mode on/off	8-10
ESC W	87	57	Turn double-wide mode on/off	8-25
ESC Y	89	59	High-speed double-density graphics	8-35
ESC Z	90	5A	Quadruple-density graphics	8-35
ESC \	92	5C	Set relative print position	8-20
ESC a	97	61	Select justification	8-30
ESC b	98	62	Set vertical tabs in channels	8-17
ESC g	103	67	Select 15 cpi	8-23
ESC k	107	6B	Select typestyle family	8-22
ESC l	108	6C	Set left margin	8-18
ESC p	112	70	Turn proportional mode on/off	8-24
ESC q	113	71	Select character style	8-29
ESC r	114	72	Select printing color	8-27
ESC t	116	74	Select character table	8-31
ESC w	119	77	Turn double-high mode on/off	8-26
ESC x	120	78	Select Letter Quality or draft	8-21

Commands Arranged by Topic

The following section lists and describes all the commands by topic. See the Quick Reference Card at the end of this manual for the list of the commands by topic.

Printer Operation

Initialization

ESC @ — Initialize Printer

Format:

ASCII code:	ESC	@
Decimal:	27	64
Hexadecimal:	**1B**	**40**

Comments:

Resets the printer mode and clears the current print line preceding the command. See Initialization in Appendix A.

Selection

DC1 — Select Printer

Format:

ASCII code:	**DC1**
Decimal:	**17**
Hexadecimal:	**11**

Comments:

Returns the printer to the selected state if it has been deselected by the printer deselect code (DC3). Does not select the printer if it has been switched off line by pressing the **ON LINE** button. DC1 and DC3 do not work if pin 36 on the parallel interface is low (for example, on IBM PC and compatible computers).

DC3 — Deselect Printer

Format:

ASCII code: DC3
Decimal: 19
Hexadecimal: **13**

Comments:

Puts the printer into the deselected state until the select printer code (DCl) is received. The printer cannot be reselected with the **ON LINE** button.

DEL — Delete Character

Format:

ASCII code: DEL
Decimal : 127
Hexadecimal: 7F

Comments:

Removes the last text character on the print line but does not affect control codes.

Printing direction

ESC < — Select Unidirectional Mode (one line)

Format:

ASCII code: ESC <
Decimal: 27 60
Hexadecimal: 1B 3C

Comments:

Printing is normally bidirectional. This command selects unidirectional printing for one line only. The print head moves to the extreme left (home) position, and printing takes place from left to right. This command is cancelled by a carriage return.

ESC U — Turn Unidirectional Mode On/Off

Format:

ASCII code:	ESC	U	n
Decimal:	27	85	n
Hexadecimal:	1B	55	n

Comments:

The following values can be used for n:

1: Mode is turned on.

0: Mode is turned off.

Printing is normally bidirectional. This command selects unidirectional printing for more accurate positioning during printing.

ESC EM — Cut Sheet Feeder Control

Format:

ASCII code:	ESC	EM	n
Decimal:	27	25	n
Hexadecimal:	1B	19	n

Comments:

The following values can be used for n:

1: Selects bin 1.

2: Selects bin 2.

R: Ejects a sheet. (No paper is loaded.)

The command should not be used unless the automatic sheet feeder is installed and CSF has been selected using **the PAPER SELECT** button. It is ignored if **any** value other than 1, 2, or R is used for n.

MSB control

MSB is the Most Significant Bit. MSB control (ESC =, ESC > , and ESC #) does not work for graphics.

ESC = (equal) — Set MSB to 0

Format:

ASCII code:	ESC	=
Decimal:	27	61
Hexadecimal:	1B	3D

Comments:

Sets the MSB of all incoming data to 0. Some computers always send data with the MSB set to 1, which means that italics or character graphics will always be printed. ESC = can overcome this problem.

ESC > — Set MSB to 1

Format:

ASCII code:	ESC	>
Decimal:	27	62
Hexadecimal:	1B	3E

Comments:

Sets the MSB bit of all incoming data as 1.

ESC # — Cancel MSB Control

Format :

ASCII code:	ESC	#
Decimal :	27	35
Hexadecimal:	1B	23

Comments:

Cancels the MSB control set by ESC = or ESC > .

Beeper

BEL — Beewr

Format:
ASCII code: BEL
Decimal: 7
Hexadecimal: 07

Comments:
Sounds the printer's beeper.

Data Control

CR — Carriage Return

Format:
ASCII code: CR
Decimal : **13**
Hexadecimal: **OD**

Comments:
Prints the data in the buffer and returns the print position to the left margin. A line feed may be added if ALIT.0 FEED XT line on the parallel interface is held LOW.

CAN — Cancel Line

Format:
ASCII code: CAN
Decimal: 24
Hexadecimal: **18**

Comments:
Removes all text on the print line but does not affect control codes.

Vertical Motion

Form feeding

FF — **Form Feed**

Format:

ASCII code: FF
Decimal: **12**
Hexadecimal: 0C

Comments:

Prints the data in the print buffer and advances the paper to the next top of form according to the current page length. The default page length is 66 lines, but the page length can be changed with ESC C. In cut sheet feeder mode, an FF ejects a sheet but does not load one.

ESC C — **Set Page Length in Lines**

Format:

ASCII code:	ESC	C	n
Decimal:	**27**	**67**	n
Hexadecimal:	**1B**	**43**	n

Comments:

Sets the page length to n lines in the current line spacing. The value of n must be from **1-127.** The top of form position is reset to the current line. Overrides the SelecType page length setting.

ESC C 0 — **Set Page Length in Inches**

Format:

ASCII code:	ESC	C	0	n
Decimal:	**27**	**67**	**0**	n
Hexadecimal:	**1B**	**43**	**00**	**n**

Comments:

Sets the page length to n inches. The value of n must be from l-22. The top of form position is reset to the current line. Overrides the SelecType page length setting.

ESC N — Set Skip Over Perforation

Format:

ASCII code:	ESC	N	n
Decimal:	27	78	n
Hexadecimal:	1B	4E	n

Comments:

The variable n is the number of lines skipped between the last line printed on one page and the first line on the next page. For example, with the standard settings for line spacing (1/6-inch), and page length (66 lines), ESC N 6 prints 60 lines and then skips 6. This setting is cancelled by ESC C or ESC C 0. The value of n must be from 1-127. Overrides the SelecType skip over perforation setting.

ESC 0 — Cancel Skir, Over Perforation

Format:

ASCII code:	ESC	0
Decimal:	27	79
Hexadecimal:	1B	4F

Comments:

Cancels the skip over perforation set by ESC N. Overrides the SelecType skip over perforation setting.

Line feeding

LF — Line Feed

Format:

ASCII code:	LF
Decimal:	10
Hexadecimal:	0A

Comments:

When this command is received, the data in the print buffer is printed and the paper advances one line in the current line spacing.

ESC 0 (zero) — Select l/&inch Line Spacing

Format:

ASCII code:	ESC	0
Decimal:	27	48
Hexadecimal:	1B	30

Comments:

Sets the line spacing to 1/8 of an inch for subsequent line feed commands. The 0 is the character zero and not decimal code 0.

ESC 2 — Select 1/6-inch Line Spacing

Format:

ASCII code:	ESC	2
Decimal:	27	50
Hexadecimal:	**1B**	32

Comments:

Sets the line spacing to 1/6 of an inch for subsequent line feed commands. The 2 is the character two and not decimal code 2. This is the default at power on.

ESC 3 — Select n/180-inch Line Spacing

Format:

ASCII code:	ESC	3	n
Decimal:	27	51	n
Hexadecimal:	1B	33	n

Comments:

Sets the line spacing to n/180 of an inch for subsequent line feed commands. The 3 is the character three and not decimal code 3. This value of n must be from 0-255.

ESC + — Select n/360-inch Line Spacing

Format:

ASCII code:	ESC	+	n
Decimal:	27	43	n
Hexadecimal:	1B	2B	n

Comments:

Sets the line spacing to n/360 of an inch for subsequent line feed commands. This value of n must be from 0-255.

ESC A — Select n/60-inch Line Spacing

Format:

ASCII code:	ESC	A	n
Decimal:	27	65	n
Hexadecimal:	1B	41	n

Comments:

Sets the line spacing to n/60 of an inch for subsequent line feed commands. The value of n must be from 0-85.

ESC J — Perform n/180-inch Line Feed

Format:

ASCII code:	ESC	J	n
Decimal :	27	74	n
Hexadecimal:	1B	4A	n

Comments:

Advances the paper n/180 of an inch. The value of n must be from 0-255. This command produces an immediate line feed but does not affect subsequent line spacing and does not produce a carriage return.

Vertical tabbing

VT — Tab Vertically

Format:

ASCII code: VT
Decimal: 11
Hexadecimal: 0B

Comments:

Advances the paper to the next tab setting in the channel selected by ESC /. If no channel has been selected, channel 0 is used. If no vertical tabs have been set, the paper advances one line.

ESC B — Set Vertical Tabs

Format:

ASCII code:	ESC	B	nl	n2	.	.	.	0
Decimal :	27	66	nl	n2	.	.	.	0
Hexadecimal:	1B	42	nl	n2	.	.	.	00

Comments:

Sets up to 16 vertical tabs in the current line spacing. Tab settings are not affected by subsequent changes in line spacing. The tab settings are entered as nl, n2, etc., all from 1-255, in ascending order. The 0 code indicates the end of the command. All settings are stored in channel 0 (see ESC b). ESC B 0 clears the tab settings.

ESC b — Set Vertical Tabs in Channels

Format:

ASCII code:	ESC	b	c	nl	n2	.	.	.	0
Decimal:	27	98	c	nl	n2	.	.	.	0
Hexadecimal:	1B	62	c	nl	n2	.	.	.	00

Comments:

Functions the same as ESC B, except that the variable c selects a channel for the vertical tabs, which must be between 0-7. Therefore, up to eight sets of vertical tabs can be set. The channels are selected by ESC /. To clear the tabs in channel c use ESC b c 0.

ESC / — Select Vertical Tab Channel

Format:

ASCII code:	ESC	/	c
Decimal:	27	47	c
Hexadecimal:	1B	2F	c

Comments:

This command is used to select the vertical tab channel, with the value of c from 0-7. All subsequent VT commands use the channel selected by this command.

Horizontal Motion

Margins

ESC l — Set Left Margin

Format:

ASCII code:	ESC	1	n
Decimal:	27	108	n
Hexadecimal:	1B	6C	n

Comments:

Sets the left margin to n columns in the current character size. Settings made in the proportional mode are treated as 10 cpi. Use lowercase 1 (as in left), not the numeral one. The minimum space between the margins is the width of one double-wide 10 cpi character.

ESC Q — Set Right Margin

Format:

ASCII code:	ESC	Q	n
Decimal:	27	81	n
Hexadecimal:	1B	51	n

Comments:

Sets the right margin to n columns in the current character spacing. Settings made in the proportional mode are treated as 10 cpi. The minimum space between the margins is the width of one double-wide 10 cpi character.

Print head movement

BS — Backspace

Format :

ASCII code: BS
Decimal: 8
Hexadecimal: 08

Comments:

Moves the print position one space to the left. Backspacing can be performed up to, but not beyond, the left margin setting. Do not use BS with ESC a.

ESC $ — Set Absolute Print Position

Format:

ASCII code:	ESC	$	nl	n2
Decimal:	27	36	nl	n2
Hexadecimal:	1B	24	nl	n2

Comments:

This sequence specifies the distance from the left margin that subsequent characters are to be printed, using this formula: total number of dots = n1 + (n2 X 256). Each unit equals 1/60th of an inch. The sequence is ignored and the previous setting remains effective if the position specified is beyond the right margin.

Format:

ASCII code:	ESC	1	nl	n2
Decimal:	27	92	nl	n2
Hexadecimal:	1B	5C	*n1*	*n2*

Comments:

Determines the position (relative to the current position) at which printing of following data will start. To find *n1* and *n2*, first calculate the displacement required in dots. If the displacement is to the left, subtract it from 65536. Send the resulting number using this formula: total number of dots = nl + (256 X *n2*). The command is ignored if it would move the print position outside the current margins. A unit is 1/120th of an inch in draft and 1/180th of an inch in Letter Quality or proportional.

Horizontal tabbing

HT Tab Horizontally

Format:

ASCII code:	HT
Decimal :	9
Hexadecimal:	09

Comments:

Advances the print position to the next horizontal tab setting. The default settings are at intervals of 8 characters in the currently selected character spacing.

ESC D — Set Horizontal Tabs

Format:

ASCII code:	ESC	D	nl	*n2*	.	.	.	0
Decimal:	27	68	nl	*n2*	.	.	.	0
Hexadecimal:	1B	44	*n1*	*n2*	.	.	.	00

Comments:

This command allows setting of up to 32 horizontal tabs, which are entered as nl, *n2, n3,* etc. (from 1-255) with the 0 code terminating the command. The tab settings must be entered in ascending order; ESC D 0 clears all tabs. The settings on power up or after an ESC @ command are every 8 characters. Tabs are set in the current cpi. The tab settings do not change if the cpi is changed, and for proportional printing the size of 10 cpi characters determines the tab positions.

Overall Printing Style

ESC x — Select Letter Quality or Draft

Format:

ASCII code:	ESC		n
Decimal :	27	120	n
Hexadecimal:	1B	78	n

Comments:

The following values can be used for n:

0: Selects the draft mode.

1: Selects the Letter Quality (LQ) mode.

Overrides the SelecType panel setting.

ESC k — Select Typestyle Family

Format:

ASCII code:	ESC	k	n
Decimal:	27	107	n
Hexadecimal:	1B	6B	n

Comments:

This command affects only the Letter Quality typestyle, not draft. If n = 0, the Roman typestyle in the printer is used. To select one of the four other typestyles, use the family number of the font shown below. For example, to choose the Prestige font, use 3 for n.

The following values can be used for n:

0 = Roman
1 = Sans Serif
2 = Courier
3 = Prestige
4 = Script
5 = OCR-B
6 = OCR-A
7=Orator (Optional)
8=Orator-S (Optional)

Overrides the SelecType setting.

ESC ! — Master Select

Format:

ASCII code:	ESC	!	n
Decimal :	27	33	n
Hexadecimal:	1B	21	n

Comments:

Selects any valid combination of the following modes: 10 cpi, 12 cpi, proportional, condensed, emphasized, double-strike, double-wide, italic, and underline. For details on how to set n, see the section on selecting typestyles with Master Select in Chapter 4.

Print Size and Character Width

ESC P — Select 10 cpi

Format:

ASCII code:	ESC	I'
Decimal :	27	80
Hexadecimal:	1B	50

Comments:

Selects 10 characters per inch. This command is normally used to cancel 12 cpi or 15 cpi.

ESC M — Select 12 cpi

Format:

ASCII code:	ESC	M
Decimal :	27	77
Hexadecimal:	1B	4D

Comments:

Selects 12 characters per inch.

ESC g — Select 15 cpi

Format:

ASCII code:	ESC	
Decimal:	27	103
Hexadecmial:	1B	67

Comments:

Selects 15 characters per inch, and cancels 10 cpi or 12 cpi. 15 cpi cannot be combined with condensed.

ESC p — Turn Proportional Mode On/Off

Format:

ASCII code:	ESC		n
Decimal:	27	112	n
Hexadecimal:	1B	70	n

Comments:

The following values can be used for n:

1: Mode is turned on.

0: Mode is turned off.

The width of proportional characters varies from character to character. Therefore, a narrow letter like i receives less space than a wide letter like W. The proportional widths are given in the character tables, which appear in Appendix B. Proportional is not available in draft mode.

SI — Select Condensed Mode

Format:

ASCII code:	SI
Decimal:	15
Hexadecimal:	0F

Comments:

Prints characters at about 60 percent of their normal width. For example, the condensed 10 cpi mode has 17 characters per inch. Cannot be combined with 15 cpi.

ESC SI — Select Condensed Mode

Format:

ASCII code:	ESC	SI
Decimal:	27	15
Hexadecimal:	1B	OF

Comments:

Duplicates the SI command.

DC2 — Cancel Condensed Mode

Format:

ASCII code:	DC2
Decimal:	18
Hexadecimal:	12

Comments:

Cancels condensed printing set by SI, ESC SI, or SelecType.

SO — Select Double-Wide Mode (one line)

Format:

ASCII code:	SO
Decimal :	14
Hexadecimal:	0E

Comments:

Double-wide mode doubles the width of all characters. This mode is cancelled by a carriage return or DC4. ESC SO duplicates this command.

ESC W — Turn Double-Wide Mode On/Off

Format:

ASCII code:	ESC	W	n
Decimal:	27	87	n
Hexadecimal:	1B	57	n

Comments:

The following values can be used for n:

1: Mode is turned on.

0: Mode is turned off.

Double-wide mode doubles the width of all characters.

DC4 — Cancel Double-Wide Mode (one line)

Format:

ASCII code:	DC4	
Decimal:	20	
Hexadecimal:	14	

Comments:

Cancels one-line double-wide printing selected by SO or ESC SO, but not double-wide printing selected by ESC W or ESC !.

ESC w — Turn Double-High Mode On/Off

Format:

ASCII code:	ESC		n
Decimal:	27	119	n
Hexadecimal:	1B	77	n

Comments:

The following values can be used for n:

1: Mode is turned ON.

0: Mode is turned OFF.

Double-high mode doubles the height of all characters. You may need to adjust line spacing to compensate for the height of these characters.

Print Enhancement

ESC r — Select Printing Color

Format:

ASCII code:	ESC		n
Decimal:	27	114	n
Hexadecimal:	1B	72	n

Comments:

The variable n selects the printing color according to the table below.

n	Color
0	Black
1	Magenta
2	Cyan
3	Violet
4	Yellow
5	Red
6	Green

ESC E — Select Emphasized Mode

Format:

ASCII code:	ESC	E
Decimal:	27	69
Hexadecimal:	1B	45

Comments:

Makes text bolder by printing each dot twice, with the second dot slightly to the right of the first.

ESC F — Cancel Emphasized Mode

Format:

ASCII code:	ESC	F
Decimal :	27	70
Hexadecimal:	1B	46

Comments:

Cancels emphasized, the mode selected by ESC E.

ESC G — Select Double-Strike Mode

Format:

ASCII code:	ESC	G
Decimal:	27	71
Hexadecimal:	1B	47

Comments:

Makes text bolder by printing each line twice, with the second printing slightly below the first.

ESC H — Cancel Double-Strike Mode

Format:

ASCII code:	ESC	H
Decimal:	27	72
Hexadecimal:	1B	48

Comments:

Turns off the double-strike mode selected by ESC G.

ESC S — Select Superscript/Subscript

Format:

ASCII code:	ESC	S	n
Decimal:	27	83	n
Hexadecimal:	1B	53	n

Comments:

Prints characters about two-thirds of the normal character height in the upper (superscript.) or lower (subscript) part of the character space. n = 0 selects superscript n = 1 selects subscript.

ESC T — Cancel Superscript/Subscript

Format:

ASCII code:	ESC	T
Decimal:	78	54
Hexadecimal:	1B	54

Comments:

Cancels either superscript or subscript.

ESC - Turn Underlining Mode On/Off

Format:

ASCII code:	ESC	-	n
Decimal:	27	45	n
Hexadecimal:	1B	2D	n

Comments:

n = 1: Mode is turned on. n = 0: Mode is turned off.
This mode underlines spaces (but not tabs).

ESC q Select Character Style

Format:

ASCII code:	ESC	q	n
Decimal:	27	113	n
Hexadecimal:	1B	71	n

Comments:

n = 0: Select normal style
n = 1: Select outline style
n = 2: Select shadow style
n = 3: Select outline with shadow

ESC(- Select Score

Format:

ASCII code:	ESC	(	-	nl	n2	m	dl	d2
Decimal:	27	40	45	nl	n2	m	dl	d2
Hexidecimal:	1B	2B	2D	nl	n2	m	dl	d2

Comments:

Use decimal or hexadecimal values, not ASCII characters, for all variables. For the first three variables: nl must be 3, n2 must be 0, and m must be 1.

The value of dl determines the location of the score:
1 = underline, 2 = strike-through, and 3 = overscore.

The value of d2 determines the line style:
1 = single continuous,
2 = double continuous,
5 = single broken, and
6 = double broken.
d2 = 0 cancels the score line selected by dl .

ESC a — Select Justification

Format:

ASCII code:	ESC		n
Decimal:	27	97	n
Hexadecimal:	1B	61	n

Comments:

The following values can be used for n:

0: Selects left justification.
1: Selects centering.
2: Selects right justification.
3: Selects full justification.

The default setting is n = 0. Full justification (n = 3) is performed when the buffer becomes full; HT, BS, and spacing commands should not be used with justification. For n = 3 there must be no carriage returns within a paragraph.

ESC SP (space) — Set Intercharacter Space

Format:

ASCII code:	ESC	SP	n
Decimal:	27	32	n
Hexadecimal:	1B	20	n

Comments:

Sets the amount of space added to the right of each character, in addition to the space already allowed in the design of the character. The number of dots is determined by n, which should be from 0-127. Each unit of space is 1/120th of an inch in draft and l/l80th of an inch in Letter Quality and proportional. Double-wide doubles the unit of space.

ESC t — Select Character Table

Format:

ASCII code:	ESC	t	n
Decimal:	27	116	n
Hexadecimal:	1B	74	n

Comments:

Selects the character table used by codes 128-255. Selecting Epson Extended Graphics does not disable italic printing. Italic printing can still be selected by ESC 4. The following values can be used for n:

0: Selects italic character table.

1: Selects Epson Extended Graphics character table.

2: Re-maps any downloaded characters from the positions 0-127 to the positions 128-255.

Note that the value of n must equal 00 hex, 01 hex or 02 hex.

See Appendix B for character tables and a hexadecimal to decimal conversion chart.

ESC 4 — Select Italic Mode

Format:

ASCII code:	ESC	4
Decimal:	27	52
Hexadecimal:	1B	34

Comments:

Causes italic characters to be printed. This command is valid even if the Epson Extended Graphics character set has been selected by ESC t or SelecType, but character graphics are not italicized.

Format:

ASCII code:	ESC	5
Decimal:	27	53
Hexadecimal:	1B	35

Comments:

Cancels the mode selected by ESC 4.

ESC R Select an International Character Set

Format:

ASCII code:	ESC	R	n
Decimal:	27	82	n
Hexadecimal:	1B	52	n

Comments:

The following values can be used for n:

0=USA	5=Sweden	l0=Denmark II
1=France	6=Italy	11=Spain II
2=Germany	7=Spain I	12=Latin America
3=England	8=Japan	13=Korea
4=Denmark I	9=Norway	64=Legal

Overrides the SelecType settings of the international character set.

User-Defined Characters

See Chapter 4 for sample programs and full information on this topic.

ESC & Define User-Defined Characters

Format:

ASCII code:	ESC	&	Od	1d 2d . . .	dn
Decimal:	27	38	Od	1d 2d . . .	dn
Hexadecimal:'	1B	26	00	dl d2 . . .	dn

Comments:

This command allows characters to be redefined in the currently selected mode.

ESC : Copy ROM into RAM

Format:

ASCII code:	ESC	:	0	n	0
Decimal:	***27***	***58***	***0***	n	0
Hexadecimal:	1B	3A	00	***n***	***00***

Comments:

This code copies the characters in the ROM into RAM so that specific characters can be redefined. Orator and Orator-S are only available with the Multi-Font Module. The variable n represents the font family as follows.

0: Roman
1: Sans Serif
2: Courier
3: Prestige
4: Script
5: OCR-B
6: OCR-A

ESC % Select User-Defined Set

Format:

ASCII code:	ESC	%	***n***
Decimal:	***27***	***37***	***n***
Hexadecimal:	1B	25	n

Comments:

ESC & is required to first define the character set. The following values can be used for n:

0: Selects the normal set.
1: Selects the user-defined set.

ESC 6 Enable Printable Characters

Format:

ASCII code:	ESC	6
Decimal:	***27***	***54***
Hexadecimal:	1B	36

Comments:

When the Epson Extended Graphics character table is selected, this code enables the printing of codes 128 through 159 (decimal) as characters, not control codes.

Format:

ASCII code:	ESC	7
Decimal:	27	55
Hexadecimal:	1B	37

Comments:

When the Epson Extended Graphics character table is selected, this code causes codes 128 through 159 to be treated as control codes. This is the default.

Graphics

See Chapter 4 for sample graphics programs. See the table under ESC * for graphics modes.

ESC K — Select Single-Density Graphics Mode

Format:

ASCII code:	ESC	K	*n1*	*n2*
Decimal :	27	75	*n1*	*n2*
Hexadecimal:	1B	4B	*n1*	*n2*

Comments:

Turns on 8-pin, single-density graphics mode. The total number of columns = *n1* + (*n2* X 256).

ESC L — Select Double-Density Graphics Mode

Format:

ASCII code:	ESC	L	*n1*	*n2*
Decimal:	27	76	*n1*	*n2*
Hexadecimal:	1B	4C	*n1*	*n2*

Comments:

Turns on 8-pin, low-speed, double-density graphics mode. The total number of columns = *n1* + (*n2* X 256).

ESC Y — Select High-Speed Double-Density Graphics Mode

Format:

ASCII code:	ESC	Y	*n1*	*n2*
Decimal:	27	89	*n1*	*n2*
Hexadecimal:	1B	59	nl	*n2*

Comments:

Turns on 8-pin, high-speed, double-density graphics mode. The total number of columns = n3 + (*n2* X 256).

ESC Z — Select Quadruple-Density Graphics Mode

Format:

ASCII code:	ESC	Z	*n1*	*n2*
Decimal :	27	90	*n1*	*n2*
Hexadecimal:	1B	5A	*n1*	*n2*

Comments:

Turns on 8-pin, quadruple-density graphics mode. The total number of columns = *n1* + (*n2* X 256).

ESC* — Select Graphics Mode

Format:

ASCII code:	ESC	*	*m*	nl	*n2*
Decimal:	27	42	*m*	*n1*	*n2*
Hexadecimal:	1B	2A	*m*	nl	*n2*

Comments:

Turns on graphics mode m. See the following table for details on the available modes. The total number of columns = nl + (*n2* X 256).

Option	Pins	*m*	Horiz. density (dots/in.)
Single-density	8	0	60
Double-density	8	1	120
High-speed double-density*	8	2	120
Quadruple-density*	8	3	240
CRT I	8	4	80
CRT II	8	6	90
Single-density	24	32	60
Double-density	24	33	120
CRT II	24	38	90
Triple-density	24	39	180
Hex-density*	24	40	360

Adjacent dots cannot be printed in this mode.

ESC ? — Reassign Graphics Mode

Format:

ASCII code:	ESC	?	*s*	m
Decimal:	27	63	s	m
Hexadecimal:	1B	3F	s	m

Comments:

Changes one graphics mode to another. The variable s is a graphics mode defined by the character K, L, Y, or Z, which is reassigned to a mode *m* (O-6).

Appendix A
Technical Specifications

Printer Specifications

Printing

Print method: 24pin impact dot matrix

Print speed: See table below.

Quality	CPI	Characters/second/line
Draft	10	333
	12	400
LQ	10	111
	12	133

Printing direction: Bidirectional logic-seeking for text and graphics. Unidirectional available through SelecType or software command.

Line spacing: l/6", l/8", or programmable in increments of 1/60th, l/180th or 1/360th of an inch

Paper feed speed: 83 ms/line at l/6" line spacing

Printable columns: See table below.

Character size	Maximum printed characters
1Ocpi	136
10 cpi condensed	233
12cpi	163
12 cpi condensed	272

Buffer: 8 Kbyte

Character fonts:

Font	Available Sizes (characters per inch)
Epson Draft	10,12,15
Epson Roman	10,12,15, Proportional
Eoson Sans Serif	10.12.15. Proportional
Epson Courier	10,12,15. Proportional
Epson Prestige	10,12,15, Proportional
Epson Script	10,12,15, Proportional
Epson OCR-A	10.12. Proportional
Epson OCR-B	10,12, Proportional
Epson ORATOR	10 (Optional)
Epson ORATOR-S	10 (Optional)

Characters:
96 standard ASCII character set
(including italic characters)
13 international character sets
Epson Extended Graphics characters

Paper feed methods:
Friction
Built-in push feed tractor
Pull tractor (optional)
Double-bin cut sheet feeder (optional)

Paper width:
Single sheets
7.15 to 14.3 inches (182 to 364 mm)
Continuous
4.0 to 16.0 inches (101 to 406 mm)
Envelope
No. 6 (166 x 92 mm),
No. 10 (240 x 104 mm)
Label
2-l/2 15/16 inches,
4 15/16 inches,
4 l-7/16 inches,

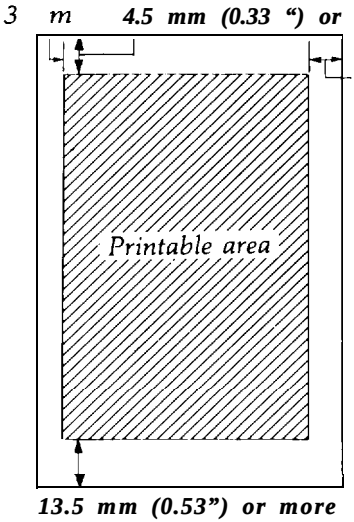
Paper length:
Single sheets
7.2 to 14.3 inches (182 to 364 mm)

Paper thickness:

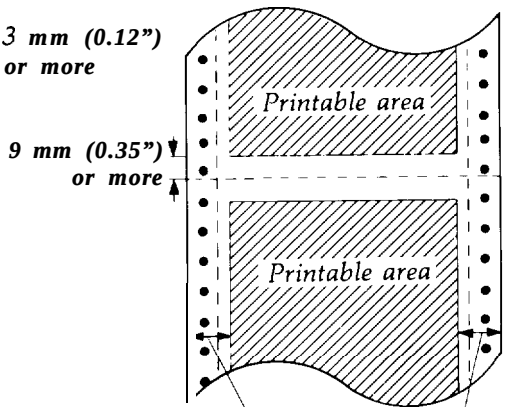
Single sheets
0.0026 to 0.004 inches (0.065 to 0.1 mm)
Continuous
0.0023 to 0.018 inches (0.06 to 0.46 mm)
Envelope
0.0063 to 0.0197 inches (0.16 to 0.52 mm)
Label
0.0075 inches (maximum 0.19 mm)

Printable area:

Single sheet



Continuous paper



*For printable area for envelopes, see page A-8.

Number of copies: Continuous, multi-part, no carbon: one original plus up to five copies. Total thickness must not exceed 0.018″ (0.46 mm)

Ribbon:

Black ribbon cartridge #7762:
Life expectancy (in Letter Quality characters, at 48 dots/character): 3 million

Color ribbon cartridge #7763:
Life expectancy (in Letter Quality characters, at 48 dots/character)

Black:	1.0 million
Cyan:	0.7 million
Magenta:	0.7 million
Yellow	0.5 million

Film ribbon cartridge #7764:
Life expectancy (at 10 cpi, with bi-directional printing, using 136 columns): 0.1 million*
* This number may vary depending on print direction, characters per inch, or text density per page.

MCBF:

For all components excluding print head: 5 million lines

MTBF:

6000 power-on hours (at 25% duty)

Print head life:

200 million strokes per wire

Dimensions and weight:

Height:	7.7"
Width:	26.6"
Depth:	20.4"
Weight :	approx. 44 lbs

Voltage:

120 VAC ± 10%

Power consumption:

400 watts maximum

Frequency:

49.5 to 60.5 Hz

Insulation resistance:

10M ohms between AC power line and chassis

Dielectric strength (between AC line and chassis):

Can withstand 1.00 kV rms applied for one minute or 1.2 kV rms applied for one second.

Temperature:	Operation: 40°F to 95°F (5°C to 35°C) Storage: -22°F to 140°F (-30°C to 60°C)
Humidity:	Operation: 10% to 80% (without condensation) Storage: 5% to 85% (without condensation)
Shock:	Operation: Up to 1 G within 1 ms Storage: Up to 2 G within 1 ms
Vibration:	Operation: Up to 0.25 G at up to 55 Hz Storage: Up to 0.50 G at up to 55 Hz

Double-Bin Cut Sheet Feeder (Optional)

Dimensions and weight: 26.7″(W) X 22.9″(D) x 16.5″(H)
(mounted on the printer)
approx. 13.2 lbs.

Bin capacity:

bin 1
Single sheets: Up to 150 sheets of 22 lb. paper
Up to 185 sheets of 17 lb. paper
(Total thickness should not exceed 0.59" or 15mm)

Envelopes* : Up to 25 (plain and bond type)
Up to 30 (air mail)

bin 2
Single sheets: Up to 150 sheets of 22 lb. paper
Up to 185 sheets of 17 lb. paper
(Total thickness should not exceed 0.59″ or 15mm)

* Envelopes can only be used in bin 1.

Stacker capacity:

Face down	Single sheets:	Up to 60 sheets of 22 lb. paper Up to 75 sheets of 17 lb. paper
	Envelopes:	Up to 10 (plain and bond type) Up to 12 (air mail)
Face up	Single sheets:	Up to 150 sheets of 22 lb. paper Up to 185 sheets of 17 lb. paper
	Envelopes:	Up to 25 (plain and bond type) Up to 30 (air mail)

Reliability

MCBF (Mean Cycle Between Failure): 100,000 cycles

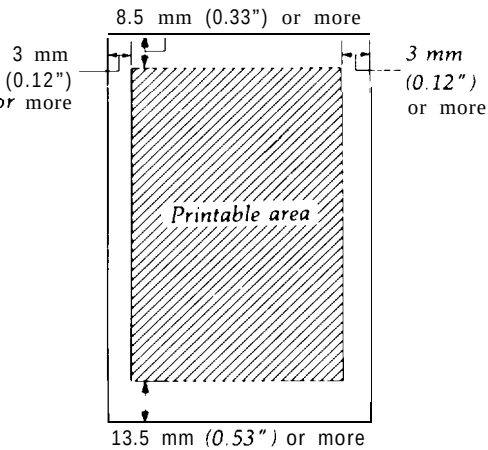
Environmental conditions

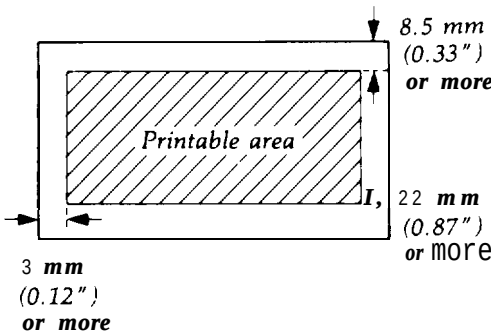
Temperature:	Operation:	+41°F (+5°C) to +95°F (+35°C)
	Storage:	−22°F (−30°C) to +158°F (+70°C)
Humidity:	Operation:	15% to 80% without condensation
	Storage:	5% to 90% without condensation

Paper

	Single sheet bin 1 and bin 2	envelope bin 1
Width	7.17″ to 14.3″ (182mm to 364mm)	6.50″ to 9.49″ (166mm to 241mm)
Length	8.27″ to 14.3″ (210mm to 364mm)	3.62″ to 4.09″ (92mm to 104mm)
Thickness	0.0028″ to 0.0039″ (0.07mm to O.lmm)	0.0063″ to 0.0205″ (0.16mm to 0.52mm)
Weight:	17 to 22 lb. paper	12 to 24 lb. paper

Printable area:





Storage condition:

Temperature:	+64°F(+18°C) to 72°F (+22°C)
Humidity:	40% to 60%

Interface Specifications

Your printer is equipped with both a parallel and a serial interface. For specifications for optional interfaces, see the manuals provided with the optional interfaces.

Parallel interface

The following tables describe the parallel interface.

Pin assignments for the parallel interface

Connector pin assignments and a description of their respective interface signals are shown in the following table.

Signal Pin	Return Pin	Signal	Direction	Description
1	19	$\overline{\text{STROBE}}$	IN	$\overline{\text{STROBE}}$ pulse to read data in. Pulse width must be more than 0.5 microseconds at the receiving terminal.
2	20	DATA 1	IN	These signals represent information of the 1st to 8th bits of parallel data, respectively. Each signal is at HIGH level when data is logical 1 and LOW when it is logical 0.
3	21	DATA 2	IN	
4	22	DATA 3	IN	
5	23	DATA 4	IN	
6	24	DATA 5	IN	
7	25	DATA 6	IN	
8	26	DATA 7	IN	
9	27	DATA 8	IN	
10	28	$\overline{\text{ACKNLG}}$	OUT	About a 11-microsecond pulse. LOW indicates that data has been received and that the printer is ready to accept more data.
11	29	BUSY	OUT	A HIGH signal indicates that the printer cannot receive data. The signal goes HIGH in the following cases: 1) During data entry (ea. char. time) 2) During printing 3) When off line 4) During printer-error state.

Signal Pin	Return Pin	Signal	Direc-tion	Description
12	30	PE	OUT	A HIGH signal indicates that the printer is out of paper.
13	—	SLCT	OUT	Pulled up to 5 volts through 3.3K ohm resistance.
14	—	AUTO FEED XT	IN	When this signal is LOW, the paper is automatically fed 1 line after printing. (The same effect can be achieved with SelecType.)
15	—	NC	—	Not used.
16	—	GND	—	Logic ground level.
17	—	CHASSIS GND	—	Printer's chassis ground, which is isolated from the logic ground.
18	—	NC	—	Not used.
19 - 30	—	GND	—	Twisted-pair return signal ground level.
31	—	$\overline{\text{INIT}}$	IN	When this level becomes LOW, the printer controller is reset to its power-up state and the print buffer is cleared. This level is usually HIGH; its pulse width must be more than 50 microseconds at the receiving terminal.
32	—	$\overline{\text{ERROR}}$	OUT	This level becomes LOW when the printer is: 1) in paper-out state 2) off line 3) in error state.
33	—	GND	—	Same as for Pins 19 - 30.
34	—	NC	—	Not used.
35	—	—	OUT	Pulled up to 5V through 3.3K ohm resistance.
36	—	$\overline{\text{SLCT IN}}$	IN	The DC1/DC3 code is valid only when this signal is "HIGH". (The same effect can be achieved with SelecType.)

- The column heading "Direction" refers to the direction of signal flow as viewed from the printer.
- "Return" denotes the twisted-pair return, to be connected at signal ground level. For the interface wiring, be sure to use a twisted-pair cable for each signal and to complete the connection on the return side. These cables should be shielded and connected to the chassis of the host computer and the printer.

- All interface conditions are based on TTL level. Both the rise and the fall times of each signal must be less than 0.2 microseconds.
- Data transfer must be carried out by observing the $\overline{\text{ACKNLG}}$ or BUSY signal. Data transfer to this printer can be carried out only after receipt of the $\overline{\text{ACKNLG}}$ signal or when the level of the BUSY signal is LOW.

Printing enabled/disabled signals and control conditions

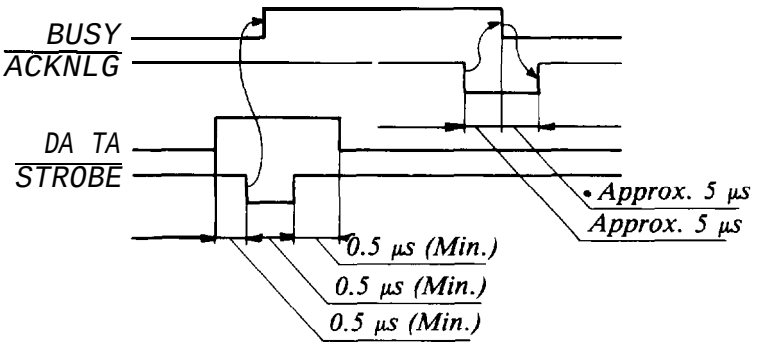
The following table shows the relationship between printing being enabled or disabled, the on line/off line status, and the receipt of the data on/off control characters, DC1 or DC3.

ON LINE (Indicator on)	$\overline{\text{SLCT IN}}$	DC1/DC3 (Data on/off control)	$\overline{\text{ERROR}}$	BUSY	$\overline{\text{ACKNLG}}$	Printing (Disabled/ enabled)
on line	Low (J9/ interface)	DC1/DC3 (no effect)	High	High/Low	Pulsed ea. char.	Enabled (normal cond.)
on line	High	DC1 Recv'd	High	High/Low	Pulsed ea. char.	Enabled
on line	High	DC3 Recv'd	High	High/Low	Pulsed ea. char.	Disabled*
off line	High/Low (no effect)	DC1 /DC3 (no effect)	Low	High	Not generated	Disabled

*While printing is disabled, character data is being received and acknowledged so that the printer can look for another DC1 character, which would allow it to resume printing.

Interface timing

The figure below shows the timing for the parallel interface.



Serial interface

The LQ built-in serial interface is an RS-232C asynchronous interface with the following characteristics:

Data format

1 start bit
Data word length: 8 bit
Odd, even, or no parity
1 stop bit

Baud **rate**

300, 600, 1200, 2400, 4800, 9600,19200 bits per second.

Signal level

Mark (1) -3 V to -27 V
Space (0) +3 V to +27 V

Handshaking

Handshaking by DTR signal or X-on/X-off. The DTR signal changes to mark - meaning the printer is not ready to receive data - when the number of bytes free in the input buffer goes down to 256. The signal changes to space - meaning that the printer is now ready - when the number of bytes in the input buffer rises to 528.

Error handling

A * character is printed if a parity error is detected. All other errors are ignored.

Connector

D-sub 25-pin connector

In this table, the direction of signals is given relative to the printer.

Pin number	Signal	Signal direction	Description
2	TXD	out	Transmits data for X-on/X-off
20	DTR	out	Indicates whether or not the printer is ready to receive data. "Mark" level indicates printer is not ready to receive data.
11	REV (=2nd RTS)	out	Same as DTR
3	RXD	in	Receives data
7	SG	—	Signal (logic) ground level
1	FG	—	Printer chassis ground

Initialization

There are the three ways that the printer can be initialized (returned to a fixed set of conditions).

Hardware initialization

- When the power is turned on
- When the printer receives an INIT signal at the parallel interface (pin 31 goes LOW).

Software initialization

- Software sends the ESC @ (initialize the printer) command.

These three kinds of initialization have slightly different effects. In particular, ESC @ resets the typestyle to the current SelecType setting; the other two methods reset the typestyle according to the default settings selected by the SelecType settings. Also, ESC @ does not initialize the printer mechanism, clear the input data buffer, or clear the user-defined character set.

Default Settings

The following table shows the default conditions that become valid when the printer is initialized.

Item	Reset to:
Top of form position	Current paper position
Left and right margins	SelecType setting
Line spacing	1/6-inch line spacing
Vertical tab positions	Cleared
Horizontal tab positions	Every eight characters
VFU channel	Channel 0
Font selection	Reset to the current SelecType setting
User-defined characters	Hardware: Cleared Software: Deselected only

In addition, the data buffer is cleared when the printer is initialized by turning on the power or by sending an INIT signal.

Note: The user-defined character set is not cleared when the printer is initialized by ESC @.

Appendix B

Proportional Width Table

This table lists the widths of your printer's proportional characters. The values given are in 360ths of an inch. For example, a value of 36 is 36/360ths of an inch. You may need to enter these widths into a special table for your processing program so it can calculate the number of proportional characters that will fit on a line.

The characters with no code indicated are international characters or graphics. See the table in the section on international characters in Chapter 3 for the relevant codes for the international characters. Also, see the descriptions of the ESC R and ESC t commands in the Command summary (Chapter 8) for information on how to use these characters.

The following width table shows each character, its ASCII code (hexadecimal), and its width. If there are two numbers in the width column, the second one is for the superscript/subscript version of the character.

Code	CHR	Width
20		30/20
21	!	18112
22	"	30/20
23	#	30120
24	$	30/20
25	%	36124
26	&	36124
27	'	18/12
28	(	24/16
29	)	24/16
2A	*	30/20
2B	t	30120
2c	,	18112
2D	-	30120
2E	.	18/12
2F	/	30120

Code	CHR	Width
30	0	30/20
31	1	30120
32	2	30/20
33	3	30120
34	4	30120
35	5	30120
36	6	30/20
37	7	30120
38	8	30/20
39	9	30120
3A	:	18/12
3B	;	18/12
3c	<	30/20
3D	=	30120
3E	>	30/20
3F	?	30120

Code	CHR	Width
40	@	36124
41	A	36124
42	B	36124
43	c	36124
44	D	36124
45	E	36/24
46	F	36124
47	G	36124
48	H	36124
49	I	24116
4A	J	30/20
4B	K	36/24
4c	L	36/24
4D	M	42128
4E	N	36/24
4F	0	36124
50	P	36/24
51	Q	36/24
52	R	36124
53	S	36124
54	T	36124
55	U	42128
56	V	36124
57	W	42128
58	X	36124
59	Y	36124
5A	Z	30/20
5B	[	24/16
5c	\	30120
5D	1	24/16
5E	^	30/20
5F	_	30/20
60	`	18112
61	a	30/20
62	b	36/24
63	c	30/20

Code	CHR	Width
64	d	36124
65	e	30120
66	ĝ	24116
67	h	36124
68		36124
69	j	18112
6A	k	24/16
6B		36/24
6C	1	18/12
6D	m	42128
6E	n	36/24
6F	0	30/20
70	P	36124
71	q	36/24
72	r	30/20
73	S	30/20
74	t	24/16
75	U	36124
76	V	36/24
77	W	42128
78	x	30/20
79	z	36/24
7A	{	30120
7B	|	24/16
7c	}	18112
7D	~	24/16
7E		30120
	Ç	36/24
	ii	36124
	é	30/20
	â	30120
	6	30120
	a	
	å	30120 30120
	ç	30/20
	ê	30120

Code	CHR	Width
	ë	30/20
	è	30120
	ï	18/12
	î	18/12
	ì	18/12
	Ä	36/24
	Å	36/24
	É	36/24
	æ	42/28
	Æ	42/28
	ô	30/20
	ö	30/20
	ò	30/20
	û	36/24
	ù	36/24
	ÿ	36/24
	Ö	36/24
	Ü	42/28
	¢	30/20
	£	30/20
	¥	36/24
	₧	42/28
	ƒ	30/20
	á	30/20
	í	18/12
	ó	30/20
	ú	36/24
	ñ	36/24
	Ñ	36/24
	ª	30/20
	º	30/20
	¿	30/20
	⌐	30/20
	¬	30/20
	½	30/20
	¼	30/20
	¡	30/20

Code	CHR	Width
	«	30/20
	»	30/20
B0		30
B1		30
B2		30
B3		30
B4		30
B5		30
B6		30
B7		30
B8		30
B9		30
BA		30
BB		30
Bc		30
BD		30
BE		30
BF		30
co		30
CI		30
C2		30
C3		30
C4		30
C5		30
C6		30
C7		30
C8		30
C9		30
CA		30
CB		30
c c		30
CD		30
CE		30
CF		30
DO		30
D1		30
D2		30

Code	CHR	Width
D3	╙	30
D4	╘	30
D5	╒	30
D6	╓	30
D7	╫	30
D8	╪	30
D9	┘	30
DA	┌	30
DB	▉	30
DC	▐	30
DD	▌	30
DE	▊	30
DF	▀	30
E0	α	30120
EI	ß	30/20
E2	Γ	30120
E3	π	30120
E4	Σ	30/20
E5	σ	30/20
E6	µ	30/20
E7	τ	30/20
E8	Φ	30120
E9	θ	30/20
EA	Ω	30120
EB	δ	30/20
EC	∞	30120
ED	ø	30120
EE	∈	30120
EF	∩	30120
F0	≡	30
F1	±	30
F2	≥	30
F3	≤	30
F4	⌠	30
F5	⌡	30
F6	÷	30
F7	≈	30

Code	CHR	Width
F8	°	30
F9	∙	30
FA	·	30
FB	√	30
FC	n	30
FD	2	30
FE	■	30
	°	24/16
	¤	30120
		36/24
	□	36/24
	Ø	30/20
		30120
	§	30/20

Character Tables

These character tables are selected by SelecType or the ESC t software command. For the Epson Extended Graphics character table, the ESC 6 or ESC 7 software command lets you select whether to print hex codes 80 to 9F as characters (ESC 6) or control codes (ESC 7).

Italic Character Table

CODE	0	1	2	3	4	5	6	7	6	9	A	B	C	D	E	F
0				0	@	P	‘	p				*0*	*@*	*P*	*‘*	*p*
1			!	1	A	Q	a	q			¡	*1*	*A*	*Q*	*a*	*q*
2			"	2	B	R	b	r			"	*2*	*B*	*R*	*b*	*r*
3			#	3	C	S	c	s			#	*3*	*C*	s	c	*s*
4			$	4	D	T	d	t			$	*4*	*D*	*T*	*d*	*t*
5			%	5	E	U	e	u			%	5	*E*	*U*	*e*	*u*
6			&	6	F	V	f	v			&	*6*	*F*	*V*	*f*	*I'*
7			'	7	G	W	g	w			’	*7*	*G*	*W*	*g*	w
8			(	8	H	X	h	x			(	*8*	*H*	*X*	*h*	*x*
9			)	9	I	Y	i	y			)	*9*	*T*	*Y*	*i*	*y*
A			*	:	J	Z	j	z			*	:	*J*	*Z*		*j z*
B			t	;	K	[	k	{			+	;	*K*	*[*	*k*	*{*
C			,	<	L	\	l	¦			,	<	*L*	\	*l*	*¦*
D			-	=	M	1	m	}				=	*M*	*]*	*m*	*}*
E			.	>	N	^	n	~			.	>	*N*	^	*n*	~
F			/	?	o	-	o				/	?	*O*	_	*o*	

Epson Extended Graphics Character Table

CODE	0	1	2	3	4	5	6	7	6	9	A	B	C	D	E	F
0				0	@	P	'	p	Ç	É	á		└	╨	α	≡
1			!	1	A	Q	a	q	ii	æ	í		┴	╤	ß	±
2			"	2	B	R	b	r	é	Æ	ó		┬	╥	Γ	≥
3			#	3	C	S	c	s	â	ô	ú		├	╙	π	≤
4			$	4	D	T	d	t	ä	ö	ñ		─	╘	Σ	⌠
5		§	%	5	E	U	e	u	à	ò	Ñ		┼	╒	σ	⌡
6			&	6	F	V	f	v	å	û	ª		╞	╓	µ	÷
7			'	7	G	W	g	w	ç	ù	º		╟	╫	τ	≈
8			(	8	H	X	h	x	ê	ÿ	¿		╚	╪	Φ	°
9			)	9	I	Y	i	y	ë	Ö	⌐		╔	┘	Θ	•
A			*	:	J	Z	j	z	è	Ü	¬		╩	┌	Ω	·
B			+	;	K	[	k	{	ï	¢	½		╦	█	δ	√
C			,	<	L	\	l	¦	î	£	¼		╠	▄	∞	n
D			-	=	M	]	m	}	ì	¥	¡		═	▌	ø	2
E			.	>	N	^	n	~	Ä	Pt	«		╬	▐	∈	■
F			/	?	O	_	o		Å	ƒ	»		╧	▀	∩	

Converting hexadecimal numbers to decimal numbers

If you prefer to use decimal numbers instead of hexadecimal numbers, you can convert them with the chart below. Just read down in the column for the first digit of the hex number and across in the row for the second digit. Where the two intersect is the decimal number that corresponds to your hex number. For example, to find the decimal equivalent of hex 5A, look where column 5 intersects with row A, There you will find decimal 90.

Hex-to-Decimal Conversion Chart

CODE	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
1	1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241
2	2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242
3	3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243
4	4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244
5	5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245
6	6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246
7	7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247
6	8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248
9	9	25	41	57	73	89	105	121	137	153	169	185	201	217	233	249
A	10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250
B	11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	251
C	12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	252
D	13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	253
E	14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	254
F	15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255

Glossary

Note that these definitions apply specifically to printers. If a word is italicized, see that topic for more information.

application program
A program that helps you carry out a particular task, such as word processing or financial planning.

ASCII
American Standard Code for Information Interchange. A standardized coding system for assigning numerical codes to letters and symbols.

automatic line feed
When this feature is turned on using SelecType, each carriage return code (CR) is automatically accompanied by a line feed (LF) code.

baud rate
A measure of the speed of data transmission. Usually equivalent to bits per second.

bidirectional printing
Printing in which the print head moves in alternate directions on every other line. This increases the speed of printing because the head prints in both directions.

binary
See number systems.

bit
A binary digit (0 or l), which is the smallest unit of information used by a printer or computer. See also ***number systems,***

buffer
See memory.

byte
A unit of information consisting of eight bits.

carriage return
The control code that returns **the** print position to **the** left margin. When issued together with a line feed, the print position moves to the left margin of the next line. In bidirectional printing, **the** print head may not actually move to the left margin.

characters per inch (cpi)
A measure of the size of text characters, often referred to as pitch. 10 cpi (also called pica) is often **the** standard or default setting.

condensed
Printing in which each character is approximately 60% of the width of standard characters. Useful for fitting wide tables or spreadsheets onto the paper.

continuous paper
Paper that **has** sprocket-feed holes on **each** side, is perforated between pages, and comes in a folded stack. Also called fanfold paper.

control code
Besides the codes for printable characters, the ASCII standard also includes 33 other codes called control codes. These control codes perform such functions as sounding the beeper and performing a carriage return or line feed.

cut sheet feeder (CSF)
An optional, detachable device that automatically feeds single sheets of paper into **the** printer.

data dump
A troubleshooting feature. **When** the printer is in data dump mode, each code that it receives is printed in hexadecimal notation as well as the ASCII codes that stand for **the** characters. Sometimes called hex dump.

decimal
See number systems.

default
A value or setting **that** takes effect when **the** equipment is turned on, reset, or initialized.

dot graphics
A graphic design formed by patterns of dots.

dot matrix
A method of printing in which each letter or symbol is formed by a pattern (matrix) of individual dots.

double-high printing
Printing in which each character is twice as high as normal.

double-strike printing
A way of producing bolder characters. Each character is printed twice; the second time, the dots are printed slightly below the original dots.

double-wide printing
A print width in which each character is twice as wide as normal characters.

draft
One of two print qualities available on your printer. Draft uses a minimum number of dots per character for high-speed printing. See also ***Letter*** Quality.

emphasized printing
A way of producing darker characters. Each character is printed twice, with the second slightly to the right of the first.

Epson Extended Graphics
The Epson Extended Graphics character table contains international accented characters, Greek characters, and character graphics for printing lines, comers, and shaded areas.

ESC (escape)
A special control code used to begin most printer commands.

ESC/P
Abbreviation for Epson Standard Code for Printers. The system of commands lets you control your printer using your computer's software. It is standard for all Epson printers and supported by most applications software for personal computers.

font
A style of type designated by a family name.

form
In printer terminology, a form is normally the equivalent of a page.

form feed
A control code and a control panel button that advances the paper to the top of the next form.

hexadecimal (hex)
See number systems.

initialize
To establish the initial default status of the printer by turning the printer on, sending ESC @, or sending an INIT signal.

interface
The connection between the computer and the printer. A parallel interface transmits data one character or code at a time, and a serial interface transmits data one bit at a time.

italic
A typestyle in which the characters slant. ***This sentence is italicized.***

Letter Quality (LQ)
One of two print qualities available on your printer. Letter Quality reduces the print speed and increases the number of dots per character to increase the print quality. See also ***draft.***

line feed
A control code and a control panel button that advances the paper one line space.

memory
The printer, like a computer, has a memory. When you print a file from a computer, the contents of the file are transferred quickly from the computer's memory to the printer's memory The printer then prints information from its own memory at a much slower rate. This way of printing frees the computer to do other work while the printer is still working. The printer memory is sometimes called the buffer.

micro-adjustment
A feature that adjusts the paper loading and tear-off positions.

number systems
Three number systems are commonly used with printers:

decimal is base 10 and uses the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. (This is the most familiar system.)

hexadecimal (hex) is base 16 and uses the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, and F. This is frequently used by programmers. Any decimal number between 0 and 255 can be expressed by a two-digit hex number.

binary is base 2 and uses only the digits 0 and 1. All information in computer systems is handled in binary form to represent electrical signals that are on or off. A binary digit is often called a bit; any decimal number between 0 and 255 can be expressed by an eight-bit binary number.

on line
When the printer is on line, it can communicate with the computer connected to it.

parallel interface
See inferface.

parity
Parity is a method for a computer and printer to check the reliability of data transmission.

platen
The black roller that provides a backing for the printing.

print quality
Your printer has two types of print quality: draft and Letter Quality (LQ). Draft is for high-speed, draft-quality jobs; LQ is for final, polished documents.

proportional printing
Printing in which the width of the character varies from character to character. For example, an uppercase W receives much more space than a lowercase i. The result looks more like a typeset book than a typewritten draft.

push tractor
The built-in device that feeds continuous paper through the printer.

RAM
Random Access Memory. The portion of the printer's memory used as a buffer and for storing user-defined characters. All data stored in RAM is lost when the printer is turned off.

reset
To return a printer to its defaults, by either a command, an INIT signal, or by turning the printer off and on.

self test
A method of checking the operation of the printer. When the self test is run, the printer prints out its current SelecType settings and the characters that are stored in its ROM.

serial interface
See interface.

short tear-off
A feature that automatically feeds the perforation of continuous paper to the tear-off position and then feeds the paper back to the loading position. This position can be adjusted by using the micro-adjustment feature.

top of form position
The position on the paper that the printer recognizes as the first printable line.

userdefined characters
Characters that are defined and stored in the printer by the user. Also known as download characters.

Index

Command descriptions are not indexed here. For page references for specific commands, see Chapter 8 or the Quick Reference card.

R

S

T

U

EPSON®
L Q - 2 5 5 0

Quick Reference

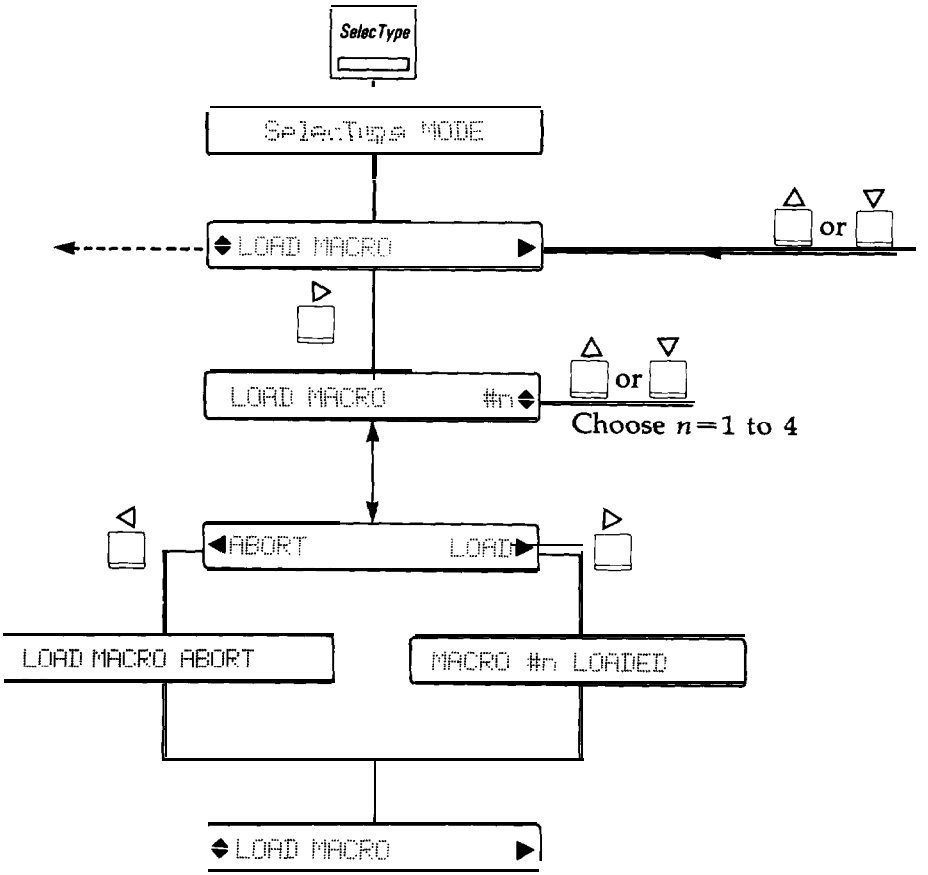
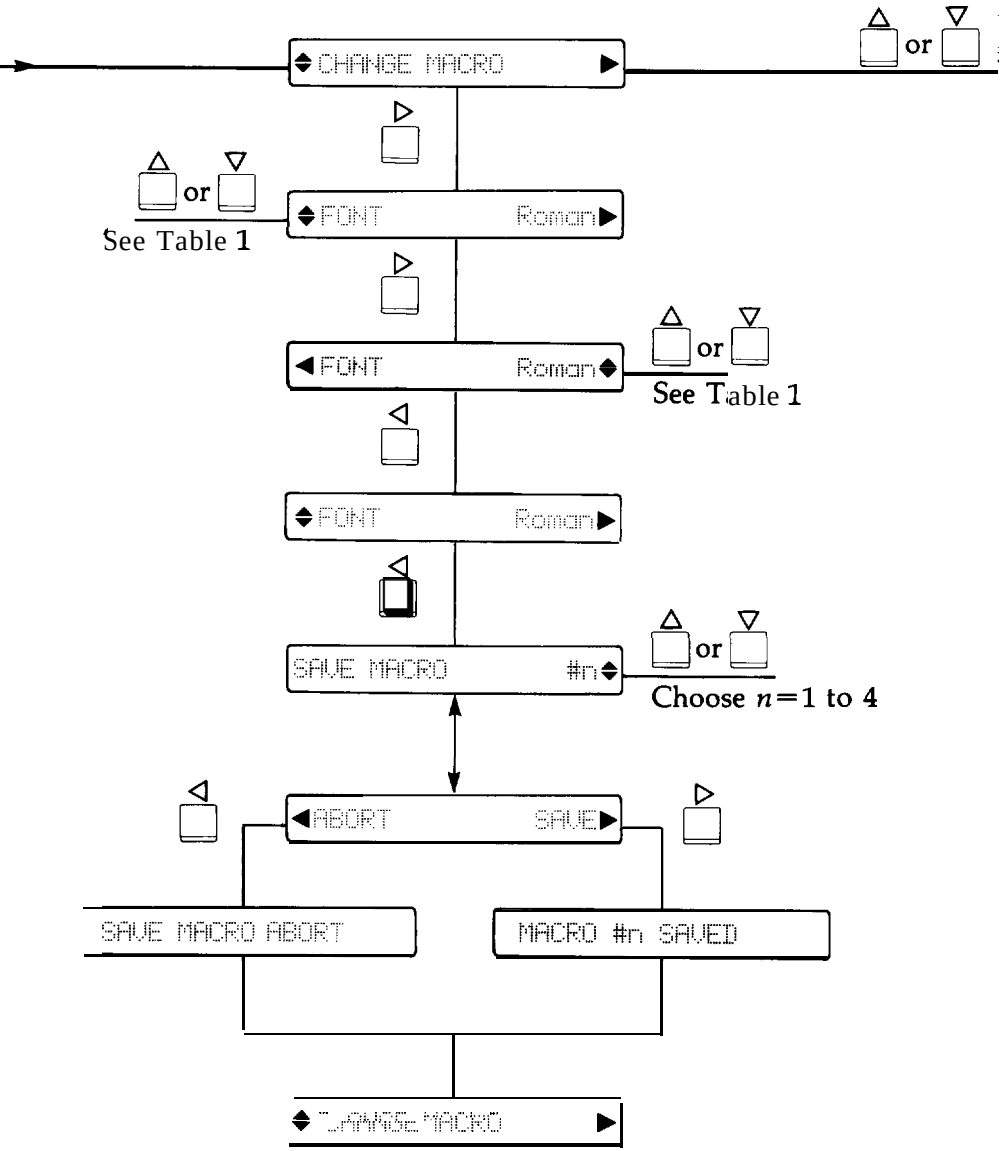
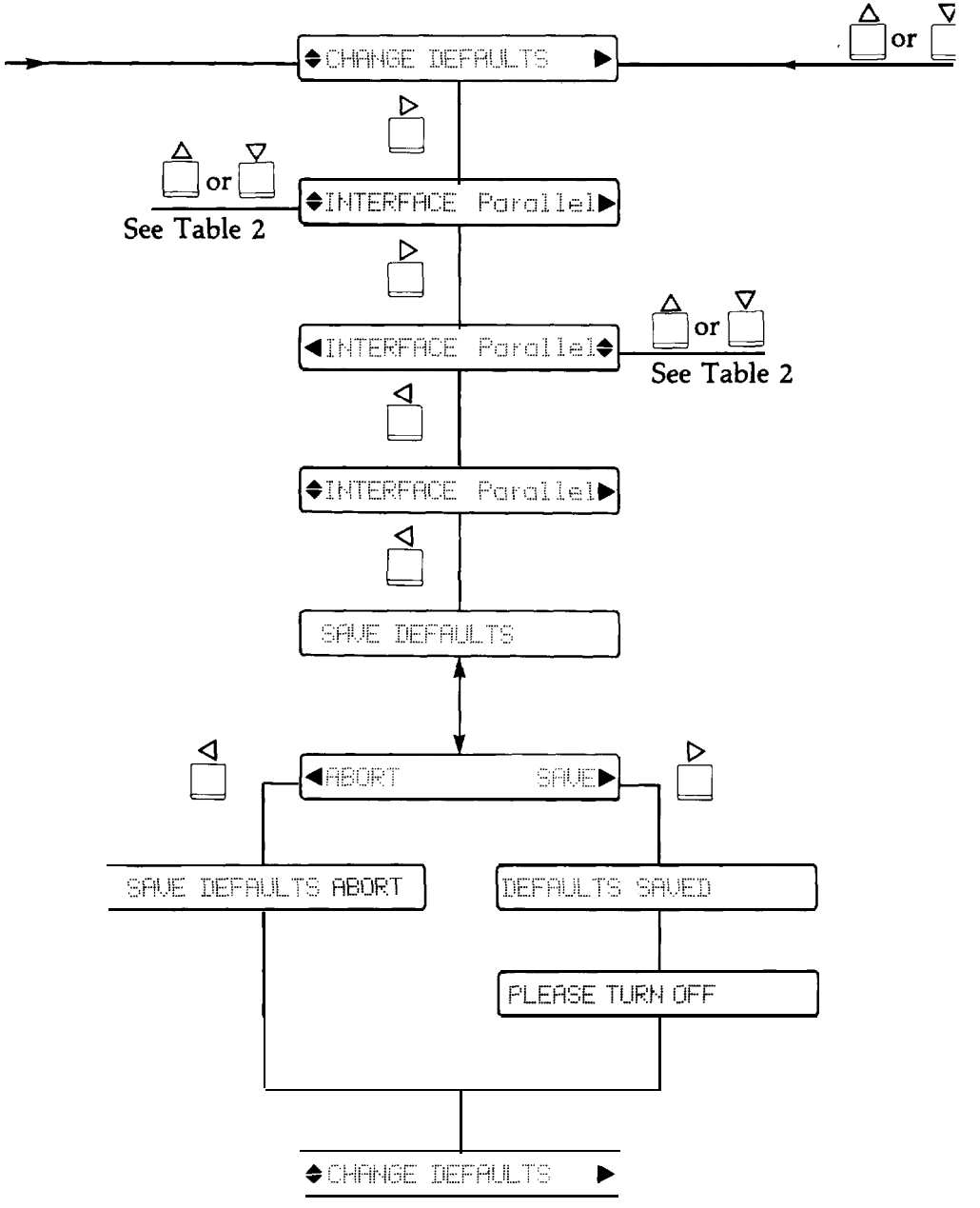


Table 1 Printer Settings and Options

FONT	Draft, Roman, Sans Serif, Courier, Prestige, Script, OCR-B, OCR-A
PITCH	10 CPI, 12 CPI, 15 CPI, Proportional
CONDENSED	On, Off
FORM LNG	Tractor 24 lines to 132 lines CSF bin 1 24 lines to 132 lines CSF bin 2 24 lines to 132 lines
1" SKIP	On, Off
AUTO TEAR OFF	On, Off
LEFT MARGIN	0 to 80 columns
RIGHT MARGIN	1 to 136 columns
CG TABLE	Italic, Graphic, Download
COUNTRY	USA, France, Germany, UK, Denmark 1, Sweden, Italy, Spain 1, Japan, Norway, Denmark 2, Spain 2, Latin America, Korea, Legal
PRINT DIR	Bi-d, Uni-d
COLOR	Black, Magenta, Cyan, Violet, Yellow, Red, Green

Note: To exit the SelecType mode, press the *SelecType* button.




CHANGE DEFAULTS
or
or
INTERFACE Parallel
See Table 2
INTERFACE Parallel
or
See Table 2
INTERFACE Parallel
SAVE DEFAULTS
ABORT
SAVE
SAVE DEFAULTS ABORT
DEFAULTS SAVED
PLEASE TURN OFF
CHANGE DEFAULTS

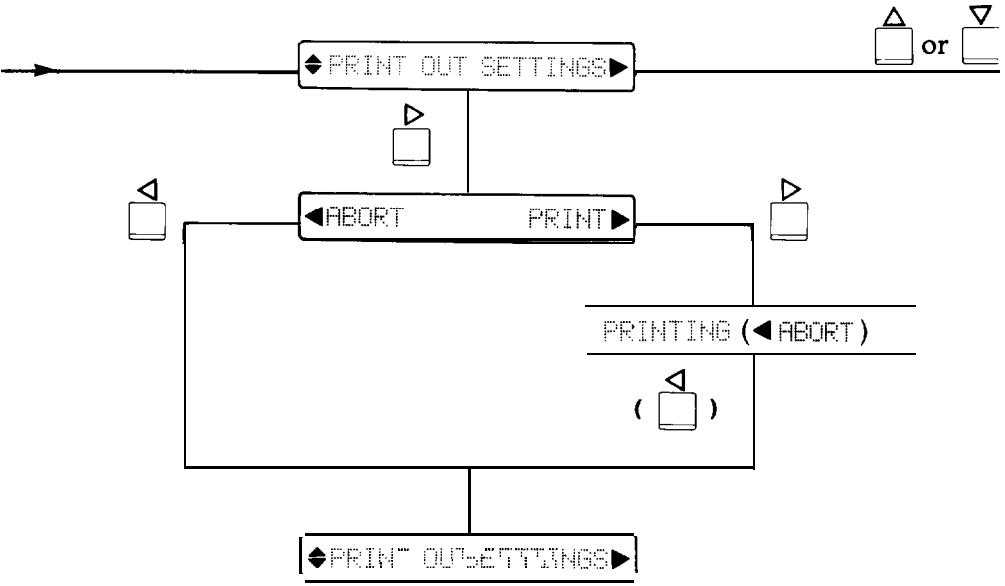
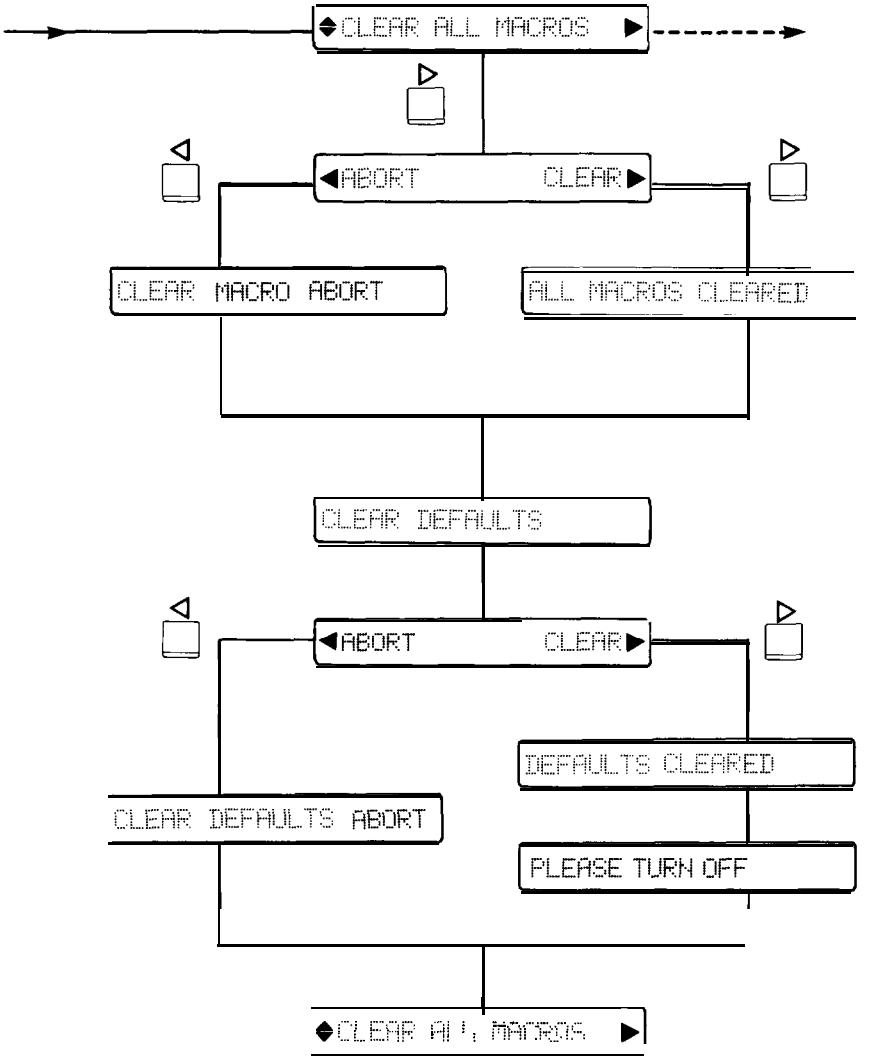


Table 2 Default Settings and Options

INTERFACE	Parallel, Serial
BAUD RATE'	300, 600, 1200, 2400, 4600, 9600, 19200 BPS
PARITY •	None, Even, Odd, ignore
AUTO LINE FEED	On, Off
DC1/DC3	Disable, Enable
DEFAULT MACRO	#1, #2, #3, #4

*These settings are displayed only when the serial interface setting is selected.


CLEAR ALL MACROS
ABORT
CLEAR
CLEAR MACRO ABORT
ALL MACROS CLEARED
CLEAR DEFAULTS
ABORT
CLEAR
DEFAULTS CLEARED
CLEAR DEFAULTS ABORT
PLEASE TURN OFF
CLEAR ALL MACROS

Commands Arranged by Topic

This section lists all the LQ-2550 commands. The numbers in the columns on the right are the page numbers in Chapter 8 where a complete description of the command can be found.

Printer Operation/Data Control

Code	Dec	Hex	Function	Page
ESC @	64	40	Initialize Printer	8-8
DC1	17	11	Select Printer	8-8
DC3	19	13	Deselect Printer	8-9
DEL	127	7 F	Delete Character	8-9
ESC <	60	3C	Select Unidirectional Mode (one line)	8-9
ESC EM	25	19	Cut Sheet Feeder Control	8-10
ESC U	85	55	Turn Unidirectional Mode On/Off	8-10
ESC =	61	3D	Set MSB to o	8-11
ESC >	62	3E	Set MSB to 1	8-11
ESC #	35	23	Cancel MSB Control	8-11
BEL	7	07	Beeper	8-12
CR	13	OD	Carriaoe Return	8-12
CAN	24	18	Cancel Line	8-12

Vertical Motion

FF	12	0C	Form Feed	8-13
ESC C	67	43	Set Page Length in Lines	8-13
ESC C 0	67	43	Set Page Length in Inches	8-13
ESC N	78	4E	Set Skip Over Perforation	8-14
ESC O	79	4F	Cancel Skip Over Perforation	8-14
LF	10	0A	Line Feed	8-14
ESC 0	48	30	Select 1/8-inch Line Spacing	8-15
ESC 2	50	32	Select 1/6-inch Line Spacing	8-15
ESC 3	51	33	Select *n*/180-inch Line Spacing	8-15
ESC +	43	2B	Select *n*/360-inch Line Spacing	8-16
ESC A	65	41	Select *n*/60-inch Line Spacing	8-16
ESC J	74	4A	Perform *n*/180-inch Line Feed	8-16
VT	11	0B	Tab Vertically	8-17
ESC B	66	42	Set Vertical Tabs	8-17
ESC b	98	62	Set Vertical Tabs in Channels	8-17
ESC /	47	2F	Set Vertical Tab Channel	8-18

rizontal Motion

SC l	108	6C	Set Left Margin	8-18
SC Q	81	51	Set Right Margin	8-18
S	8	08	Backspace	8-19
SC $	36	24	Set Absolute Print Position	8-19
SC \	92	5C	Set Relative Print Position	8-20
T	9	09	Tab Horizontally	8-20
SC D	68	44	Set Horizontal Tabs	8-21

erall Printing Style/Print Size

ode	Dec	Hex	Function	Page
SC x	120	78	Select Letter Quality or Draft	8-21
SC k	107	6B	Select Typestyle Family	8-22
SC !	33	21	Master Select	8-22
SC P	80	50	Select 10 cpi	8-23
SC M	77	4D	Select 12 cpi	8-23
SC g	103	67	Select 15 cpi	8-23
SC p	112	70	Turn Proportional Mode On/Off	8-24
(ESC SI)	15	I OF	I Select Condensed Mode	8-24
c2	18	12	Cancel Condensed Mode	8-25
3 (ESC SO)	14	0E	Select Double-Wide Mode (one line)	8-25
SC W	87	57	Turn Double-Wide Mode On/Off	8-25
C4	20	14	Cancel Double-Wide Mode (one line)	8-26
SC w	119	77	Turn Double-Hugh Mode On/Off	8-26

nt Enhancement/Word Processing

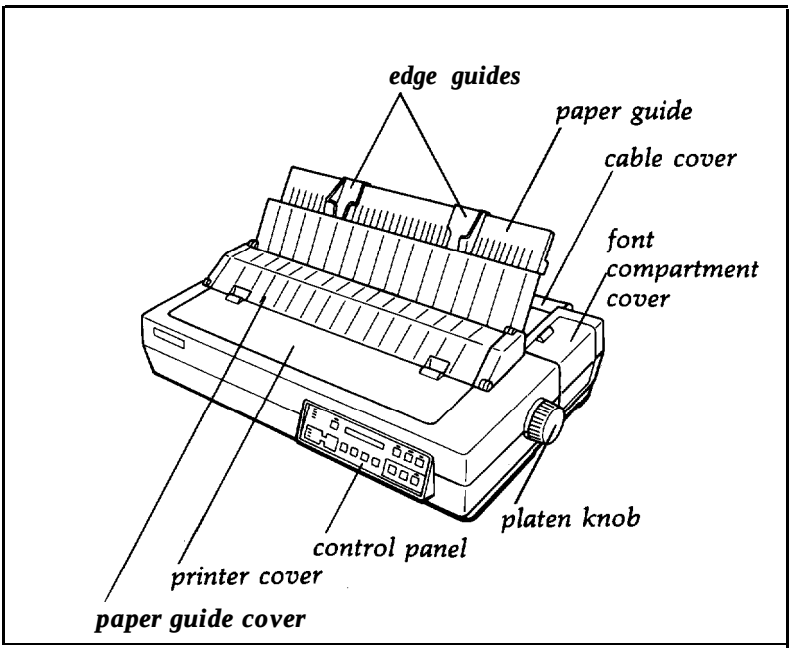
SC r	114	72	Select Printing Color	8-27
SC E	69	45	Select Emphasized Mode	8-27
SC F	70	46	Cancel Emphasized Mode	8-27
SC G	71	47	Select Double-Strike Mode	8-28
SC H	72	48	Cancel Double-Strike Mode	8-28
SC so	83	53	Select Superscript Mode	8-28
ic S1	83	53	Select Subscript Mode	8-28
SC T	84	54	Cancel Superscript/Subscript	8-29
SC –	45	2D	Turn Underlining On/Off	8-29
SC (–	40	28	Select Score	8-29
SC q	113	71	Select Character Style	8-29
SC a	97	61	Select Justification	8-30
SC SP(space)	32	20	Set Intercharacter Space	8-30

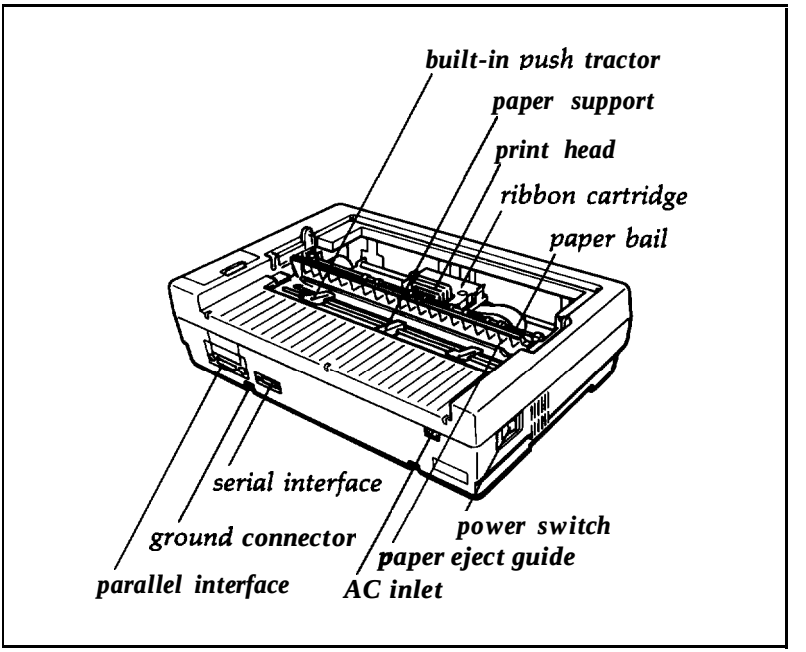
Character Sets

ESC t	116	74	Select Character Table	8-31
ESC 4	52	34	Select Italic Mode	8-31
ESC 5	53	35	Cancel Italic Mode	8-32
ESC R	82	52	Select an International Character Set	8-32

User-Defined Characters/Graphics

ESC &	38	26	Define User-Defined Characters	8-32
ESC :	58	3A	Copy ROM into RAM	8-33
ESC %	37	25	Select User-Defined Set	8-33
ESC 6	54	36	Enable Printable Characters	8-33
ESC 7	55	37	Enable Upper Control Codes	8-34
ESC K	75	4B	Select Single-Density Graphics Mode	8-34
ESC L	76	4C	Select Double-Density Graphics Mode	8-34
ESC Y	89	59	Select High-Speed Double-Density Graphics	8-35
ESC Z	90	5A	Select Quadruple-Density Graphics Mode	8-35
ESC *	42	2A	Select Graphics Mode	8-35
ESC ?	63	3F	Reassign Graphics Mode	8-36


edge guides
paper guide
cable cover
font compartment cover
platen knob
control panel
printer cover
paper guide cover


built-in push tractor
paper support
print head
ribbon cartridge
paper bail
serial interface
ground connector
parallel interface
power switch
paper eject guide
AC inlet

LQ-2550

User's Manual LQ-2550

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